DNV

PROPOSED LARGE-SCALE RESIDENTIAL DEVELOPMENT, BOHERBOY, SAGGART, CO. DUBLIN

EIAR Volume 2

Evara Developments Ltd and Kelland Homes Ltd

Date: 05-12-2025

Table of Contents

Chapter 1: Introduction

Chapter 2: Description of the Proposed Development

Chapter 3: Planning Context

Chapter 4: Population and Human Health

Chapter 5: Biodiversity

Chapter 6: Land and Soils

Chapter 7: Hydrology and Hydrogeology

Chapter 8: Air Quality

Chapter 9: Climate

Chapter 10: Noise and Vibration

Chapter 11: Landscape and Visual Impact Assessment

Chapter 12: Archaeology and Cultural Heritage

Chapter 13: Material Assets: Waste and Utilities

Chapter 14: Material Assets Traffic

Chapter 15: Risk Management

Chapter 16: Interactions

Chapter 17: Mitigation and Monitoring Measures

1 INTRODUCTION AND METHODOLOGY

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by Synergy Environmental Limited T/A DNV (hereinafter referred to as DNV) on behalf of Evara Developments Ltd and Kelland Homes, here in after referred to as 'the Applicant', who is seeking planning permission for a mixed-use Large Scale Residential development of 611 residential units on an 18.7-hectare site at Boherboy, Saggart, Co. Dublin.

This EIAR presents the environmental impact assessment (EIA) process which has been undertaken in accordance with the Planning and Development Regulations 2001 (as amended).

EIA is a process of identifying and evaluating the likely environmental, social and economic effects of a proposed development project, taking into account both adverse and beneficial effects. EIA also involves finding ways and means to reduce adverse effects and enhance beneficial effects. It ensures that planning decisions are made, taking into account the environmental effects and with engagement from stakeholders has been compiled in accordance with all current legislation and best practice guidance.

This chapter describes the methodology by which the EIA was carried out and the EIAR was completed. The methodology used is broadly consistent across all chapters to ensure the EIAR is clear to navigate for the reader.

1.2 Quality Assurance and Competency of Experts

Under Article 5(3)(a) of Directive 2014/52/EU it is a requirement that:

> *"the developer shall ensure that the environmental impact assessment report is prepared by competent experts"*

This EIAR has been led and coordinated by DNV. Technical chapters have been prepared by a multi-consultancy team of environmental specialists.

Founded in 2010, Enviroguide is an award-winning, multi-disciplinary environmental consultancy specialising in environmental compliance, ecology, planning, waste management, contaminated land, engineering, and sustainability. Providing end to end environmental consultancy services, Enviroguide consultants hold scientific, engineering, and/or legal qualifications with extensive technical knowledge and extensive practical experience within the environmental consultancy and management sectors. Professional memberships include the Chartered Institute of Ecology and Environmental Management, the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association, the Institute of Environmental Management and Assessment (IEMA), Engineers Ireland, the Institute of Geologists of Ireland, and the Royal Town Planning Institute.

Enviroguide was acquired by DNV in 2023. DNV is the independent expert in risk management and assurance, operating in more than 100 countries. Through its broad experience and deep

expertise DNV advances safety and sustainable performance, sets industry benchmarks, and inspires solutions.

This chapter has been prepared by Grainne Ryan, Principal EIA Consultant at DNV. Gráinne is a Principal Environmental Consultant with 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Gráinne has a B.A, in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been reviewed and approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

For each chapter of this EIAR, the author, qualifications, and experience of working on other development projects are detailed. The EIAR Project Team are identified in Table 1-1.

Table 1-1 EIAR Project Team

No.	Chapter	Consultant Name and address	Specialist Area
1	**Introduction and Methodology**	DNV, 3D Core C, The Plaza, Park West, D12F9T Gráinne Ryan	Multidisciplinary Planning and Environmental Consultants
2	**Description of the Proposed Development and Assessment of Alternatives**	DNV, 3D Core C, The Plaza, Park West, D12F9T Gráinne Ryan	Multidisciplinary Planning and Environmental Consultants
3	**Planning and Development Context**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Rachel Redmond	Multidisciplinary Planning and Environmental Consultants
4	**Population and Human Health**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Rachel Redmond	Multidisciplinary Planning and Environmental Consultants
5	**Biodiversity**	Scott Cawley 4-6 Riverwalk, Citywest Business Campus, Dublin 24, D24 DCW0 Bea	Ecological Consultancy
6	**Land and Soils**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Nuria Manzanas Gareth Carroll	Multidisciplinary Planning and Environmental Consultants
7	**Hydrology and Hydrogeology**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Nuria Manzanas	

No.	Chapter	Consultant Name and address	Specialist Area
		Gareth Carroll	
8	**Air Quality**	AONA Environmental Consulting, Unit 8A Northwest Business Park, Sligo, F91 E285 Mervyn Keegan	Air Quality Consultants
9	**Climate**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Aoife Gillen Milo Reddaway	Multidisciplinary Planning and Environmental Consultants
10	**Noise and Vibration**	Wave Dynamics, Unit 202, Nesta Business Centre, Old Airport Rd, Santry, Dublin, D09 HP96 James Cousins Cathal Reck	Acoustic Consultancy Services
11	**Landscape and Visual Impact Assessment**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Dara Hilliard	Multidisciplinary Planning and Environmental Consultants
12	**Archaeology and Cultural Heritage**	IAC Archaeology, Unit G1, Network Enterprise Park, Kilcoole, Co. Wicklow A63 KT32 Lucy Bagshaw	Archaeology and Heritage Consultancy
13	**Material Assets – Waste and Utilities**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Aisling Jones	Multidisciplinary Planning and Environmental Consultants
14	**Material Assets – Traffic and Transport**	Pinnacle, Grosvenor Court, 67A Patrick Street, Dun Laoghaire, Co. Dublin Shaun O'Reilly James Mayer	Engineering Consultancy
15	**Risk Management**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Lakshmi Priya Mohan	Multi-disciplinary environmental, planning and heritage resource management consultancy
16	**Interactions**	DNV, 3D Core C, The Plaza, Park West, D12F9TN Darragh Grant	Multidisciplinary Planning and Environmental Consultants
17	**Mitigation and Monitoring**	DNV, 3D Core C, The Plaza, Park West, D12F9TN	Multidisciplinary Planning and Environmental Consultants

No.	Chapter	Consultant Name and address	Specialist Area
		Aisling Jones	
NTS	Non-Technical Summary	Input from all above consultants and compiled by DNV	Multidisciplinary Planning and Environmental Consultants
App	Appendices		

1.3 Purpose of the Environmental Impact Assessment and the Environmental Impact Assessment Report

EIA is a systematic examination of the potential impacts of a proposed development on the environment. In assessing the environmental impacts, this EIAR will review the baseline conditions, describe the Proposed Development and identify the potential for likely significant environmental effects during construction and operation.

Where likely significant adverse effects are identified, proposed mitigation measures will be presented to avoid, manage and minimise such effects.

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

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

Where likely significant environmental effects are identified that are unacceptable, the EIA process aims to quantify and minimise the effects of the impact that the specified development has on the environment through appropriate mitigation measures and where necessary, subsequent monitoring. This process is illustrated in Figure 1-1.

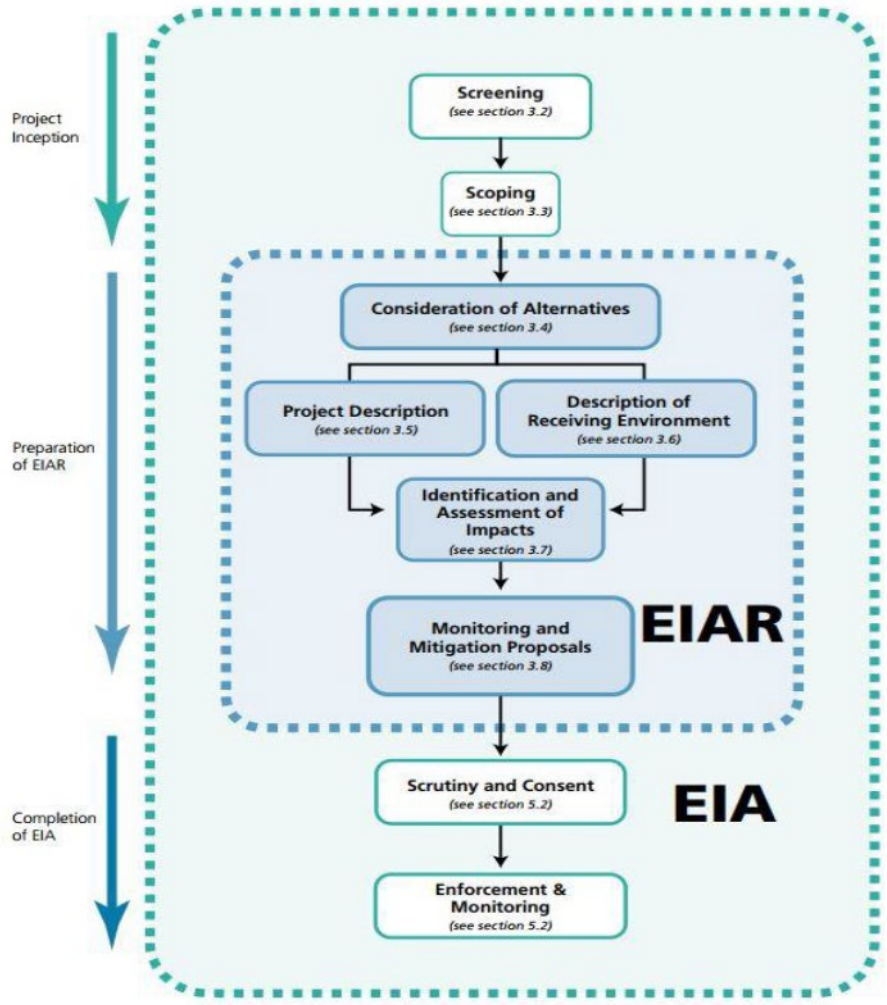

Figure 1-1 EIA Process

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

1.4 EIA Legislation

The EIA Directive requires EIA to be carried out for certain projects as listed in Annex I of the Directive. The EIA Directive is transposed into Irish law through the Planning and Development Act 2000, as amended, and the Planning and Development Regulations 2001, as amended.

1.5 EIA Guidance Used

This EIAR has been prepared in accordance with all relevant guidance. Topic specific methodology guidance will be set out in the topic chapters. The following general guidance has been used to inform the approach to EIA and present the EIAR chapters.

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA May 2022);
- Environmental Assessments of Plans, Programmes and Projects – Rulings of the Court of Justice of the European Union (European Union 2017);
- Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Union 2017);
- Guidance of Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Union 2013);
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Union 2017);
- European Commission 2017. Environmental Impact Assessment of Projects Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU);
- EU Commission Guidance on Interpretation of definitions of project categories of annex I and II of the EIA Directive (2015);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Government of Ireland 2018);
- Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems; (Department of Housing, Planning, Community and Local Government 2017);
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999);
- Circular PL 05/2018 -Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive), and Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government 2018);
- Implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Communities 2003); and
- Office of the Planning Regulator (OPR) Environmental Impact Assessment Screening Practice Note (2021).

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

> "(*i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
>
> *(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
>
> *(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
>
> *(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii);*

(iii) and, where appropriate, its own supplementary examination; and

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

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

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 (respectively, the Habitats Directive and the Birds Directive)

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)

1.6 The Need for an EIA

Annex 1 of the EIA Directive requires as mandatory an EIA for all development projects listed therein. Schedule 5, Part 1, of the Planning Regulations transposes Annex 1 of the EIA Directive directly into Irish planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning Regulations which exceeds a limit, quantity or threshold set for that class of development. The Proposed Development is not considered to fall under any class set out in Schedule 5, Part 1 of the Planning Regulations.

Schedule 5, Part 2 of the Planning and Development Regulations 2001 as amended, defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

10. Infrastructure projects

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

It is proposed to construct 627 residential units as part of the Proposed Development.

This is above the stated threshold of 500 dwellings. Therefore, the Proposed Development is subject to a mandatory EIA for Part 2, Section 10 (b)(i).

1.7 Scope of the EIAR

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

"Determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR".

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

The scope of this EIAR has had regard to the documents listed in Section 1.5 together with:

- The requirements of Part X of the Planning Act and Part 10 of the Planning Regulations.
- The requirements of the South Dublin County Council Development Plan 2022-2028.
- Relevant Regional and National Planning Policy Documents.
- The receiving environment and any vulnerable or sensitive local features and current uses.
- Previous relevant planning history and applications that have been submitted on the subject and adjoining lands.
- The likely and significant impacts of the Proposed Development on the environment; and
- Available mitigation measures for reducing or eliminating any potentially significant undesirable impacts.

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

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

1.8 Purpose and Objective of the EIAR

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

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

- Anticipating, avoiding and reducing significant effects.
- Assessing and pursuing preventative action.
- Maintaining objectivity.
- Ensuring clarity and quality.
- Providing relevant information to decision makers; and
- Facilitating public and stakeholder consultation.

EIA is an iterative process. The EIAR captures this assessment process and describes its outcomes. The EIAR documents the consideration of environmental effects and provides transparent, objective and replicable documentary evidence of the EIA evaluation and decision-making processes. The EIAR provides information on any identified effects arising as a consequence of the Proposed Development and which:

- Are environmentally based.

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

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

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

1.9 Format and Structure of this EIAR

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

Each technical assessment sets out the relevant legislation, policy, and guidance together with the methodology used to carry out the assessment of potential effects, including the criteria that are used to establish which effects are significant. The significance criteria follow that as defined in the EPA 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' 2022[1] as shown in Table 1-2 below.

Table 1-2 Description of Effects

Category	Type and Description
Quality of Effects It is important to inform the non-specialist reader whether an effect is positive, negative or neutral.	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative/Adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance)

[1] https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf

Category	Type and Description
Describing the Significance of Effects '*Significance*' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful *(also see Determining Significance)*.	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not Significant An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
	Very Significant An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics.
Describing the Extent and Context of Effects Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced**.**	**Extent** Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
	Context Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions.
	Likely Effects

Category	Type and Description
	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Probability of Effects Descriptions of effects should establish how likely it is that the predicted effects will occur so that the CA can take a view of the balance of risk over advantage when making a decision.	**Likely Effects** The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Duration and Frequency of Effects *'Duration'* is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful.	**Momentary Effects** Effects lasting from seconds to minutes.
	Brief Effects Effects lasting less than a day.
	Temporary Effects Effects lasting less than a year.
	Short-term Effects Effects lasting one to seven years.
	Medium-term Effects Effects lasting seven to fifteen years.
	Long-term Effects Effects lasting fifteen to sixty years.
	Permanent Effects Effects lasting over sixty years.
	Reversible Effects Effects that can be undone, for example through remediation or restoration.
	Frequency of Effects Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Describing the Types of Effects	**Indirect Effects (a.k.a. Secondary or Off-site Effects)** Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative Effects

Category	Type and Description
	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
	'Do-nothing Effects' The environment as it would be in the future should the subject project not be carried out.
	'Worst-case' Effects The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable Effects When the full consequences of a change in the environment cannot be described.
	Irreversible Effects When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual Effects The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SOx and NOx to produce smog)

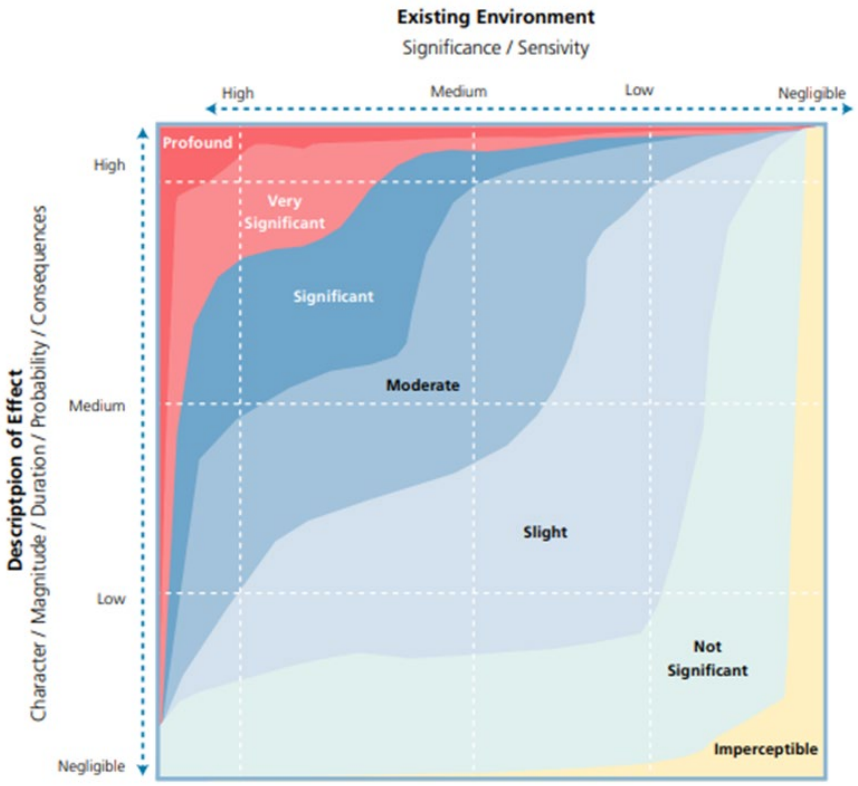

Figure 1-2 :Determining the Significance of the Effect (EPA 2022)

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

- Population and Human Health.
- Biodiversity.
- Land and Soils.
- Water.
- Air Quality.
- Material Assets.
- Cultural Heritage; and
- Landscape and Visual.

The potential likely significant effects caused by the vulnerability of the Proposed Development to risks of major accidents and/or disasters must also be examined.

The structure of the EIAR is set out in Table 1-3 below.

Table 1-3 Structure of the Environmental Impact Assessment Report (EIAR)

No.	Chapter	Content
1	Introduction	Chapter 1 sets out the introduction, the site description, the general methodology and approach to the EIAR.
2	Description of the Proposed Development & Assessment of Alternatives	As required under Article 5(1)(a) of the EIA Directive, Chapters 2 provides a description of the site, design, and scale of Proposed Development, and as required

No.	Chapter	Content
		under Article 5(d), an evaluation of the reasonable alternative design approaches.
3	Planning and Development Context	Chapter 3 sets the national, regional and local policy framework for the Proposed Development.
4	Population and Human Health	Chapter 4 covers the requirement for assessment on potentially significant effects to population and human health as required under Article 3(1)(a) of the EIA Directive.
5	Biodiversity	Chapter 5 covers the requirement of Article 3(1)(b) to assess potentially significant effects on biodiversity (which previously referred only to 'fauna and flora'), having particular attention to species and habitats protected under the Habitats Directive and the Birds Directive.
6	Land and Soils	Chapter 6 covers the requirement under Article 3(1)(c) of the EIA Directive on Land and Soil to assess the type of soil and geology in the area of the Proposed Development and identifies any potentially significant effects.
7	Hydrology and Hydrogeology	Chapter 7 covers the requirement under Article 3(1)(c) of the EIA Directive to assess potentially significant effects to water quality arising from the Proposed Development. This chapter will assess any potential effects from pollution and discharges to surface water.
8	Air Quality	Chapter 8 covers the requirement under Article 3(1)(c) of the EIA Directive on Air to assess potentially significant effects to air quality in the surrounding environment.
9	Climate	Chapter 9 covers the requirement under Article 3(1)(c) of the EIA Directive to assess potentially significant effects on Climate Change (greenhouse gas emissions and its vulnerability to climate change).
10	Noise and Vibration	Chapter 10 covers the requirement to assess potentially significant effects from airborne noise and vibration as required under Article 3(1)(a) of the EIA Directive on Human Health.
11	Landscape and Visual Impact Assessment	Chapter 11 covers the requirement under Article 3(1)(d) of the EIA Directive to assess potentially significant effects on the landscape. This chapter will assess any potential visual impacts to landscape caused by the Proposed Development.
12	Archaeology and Cultural Heritage	Chapter 12 covers the requirement under Article 3(1)(d) of the EIA Directive to assess potentially significant effects on cultural heritage.
13	Material Assets – Waste and Utilities	Chapter 13 covers the requirement under Article 3(1)(d) of the EIA Directive to assess potentially significant effects on material assets. This chapter will identify impacts to existing utilities and infrastructure from the development of the Proposed Development. Article 5(1), Annex IV, point 1(d) requires estimates of quantities and types of waste produced during construction and operation phase. Chapter 12 will also present an assessment of how resources and waste will be managed for the Proposed Development

No.	Chapter	Content
14	Material Assets – Traffic and Transport	Chapter 14 sets out traffic and transport effects that will be caused on nearby receptors due from increase vehicle movements during the construction phase and operational phase.
15	Risk Management	Chapter 15 covers the requirement under Article 3(2) of the EIA Directive, to include the expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters.
16	Interactions	As required under Article 3(1)(e) of the EIA Directive, Chapter 16 provides an assessment of the interaction between all of the environmental aspects referred to in this EIAR.
17	Summary of Mitigation and Monitoring Measures	Chapter 17 describes mitigation and monitoring as required under Article 5(1) of the EIA Directive in order to avoid, prevent, reduce, or if possible, offset any identified significant adverse effects on the environment and, where appropriate, describes any proposed monitoring arrangements.

This approach employs standard descriptive methods, replicable prediction techniques and standardised impact descriptions to provide an appropriate evaluation of each environmental topic under consideration.

1.10 Methodology Used to Produce this EIAR

The methodology employed to produce this EIAR is detailed in Table 1-4 below. The objective is to evaluate each environmental topic, both individually and collectively, in a systematic and objective manner.

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

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

Table 1-4 EIA Chapter Approach

Chapter	Description of Section
Introduction	Provides an overview of the specialist area and specifies the specialist who prepared the assessment.

Chapter	Description of Section
Study Methodology	This subsection outlines the method by which the relevant impact assessment has been conducted within that chapter.
The Existing Receiving Environment (Baseline Situation)	This section will describe and assess the receiving environment, the context, character, significance and sensitivity of the baseline receiving environment into which the Proposed Development will fit. This analysis also takes account of any other proposed developments that are likely to proceed in the immediate surroundings.
Characteristics of the Proposed Development	Consideration of the '*Characteristics of the Proposed Development'* allows for a projection of the '*level of impact'* on any particular aspect of the environment that could arise. For each chapter those characteristics of the Proposed Development which are relevant to the area of study are described; for example, the chapter on landscape and visual impact addresses issues such as height, design and impact on the surrounding landscape.
Potential Impact of the Proposed Development	This section provides a description of the specific, direct and indirect, effects that the Proposed Development may have. This analysis is provided with reference to both the Existing Receiving Environment and Characteristics of the Proposed Development sections, while also referring to the: (i) magnitude and intensity, (ii) integrity, (iii) duration and (iv) probability of impacts. The assessment addresses whether the impacts are direct, indirect, secondary or cumulative in nature. It also looks at the timescale of such impacts e.g. are they short, medium, long-term, and are they of a temporary, permanent, continuous or intermittent nature, and are they positive or negative impacts. The impact interactions are also addressed.
Avoidance, Remedial and Mitigation Measures	This section of each chapter describes the mitigation measures which are required. The requirement to describe mitigation measures is laid out in the EIA Directive, as implemented by the Planning Act and the Planning Regulations. Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential impacts of the Proposed Development. This includes avoidance, reduction and remedy measures as set out in Section 4.7 of the Development Management Guidelines 2007, to reduce or eliminate any significant adverse impacts identified.
Residual Impacts of the Proposed Development	This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term, temporary, permanent, continuous, or intermittent, positive and negative effects as well as impact interactions which the Proposed Development may have, assuming all mitigation measures are fully and successfully applied.

Chapter	Description of Section
Do Nothing Impact	In order to provide a qualitative and equitable assessment of the Proposed Development, this section considers the Proposed Development in the context of the likely impacts upon the receiving environment should the Proposed Development not take place.
Monitoring	This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring.
Reinstatement	While not applicable to every aspect of the environment considered within the EIAR, certain measures may need to be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment.
Interactions	This section provides a description of impact interactions together with potential indirect, secondary and cumulative impacts.
Difficulties Encountered in Compiling Information	The EIA Directive requires that the EIAR includes *'details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved'* (EIA Directive, Annex IV, Part 6). Each chapter that contains an environmental baseline and assessment contains a section outlining any difficulties encountered in compiling that chapter.

1.11 Non-Technical Summary

A Non-Technical Summary of the EIAR has also been prepared. The EIA Directive states that one of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications of any decisions. EPA Guidelines note that the non-technical summary of the EIAR should facilitate the dissemination of the information contained in the EIAR and that the core objective is to ensure that the public is made as fully aware as possible of the likely environmental impacts of projects prior to a decision being made by South Dublin County Council. A Non-Technical Summary of the EIAR has therefore been prepared which summarises the key environmental impacts and is provided as a separately bound document.

1.12 Links between EIAR and Appropriate Assessment

A Screening Report for Appropriate Assessment (AA) has been carried out by Scott Cawley Ltd for the Proposed Development, to determine if there is a risk of effects to any Natura 2000 sites.

Upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of the AA Screening report that, ‘‘There is a requirement to proceed to Stage 2 of the Appropriate Assessment process; and the preparation of an NIS is required’’.

Design alteration requirements and appropriate mitigation measures have been set out in the NIS, such that their implementation will ensure that impacts on the conservation objectives of European sites will be unlikely during the Construction and Operational Phases of the Proposed Development. Consequently, there will be no adverse effects on any European sites.

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

1.13 Availability of EIAR Documents

A copy of this EIAR document and Non-Technical Summary is available for purchase at the offices of South Dublin County Council at a fee not exceeding the reasonable cost of reproducing the document.

1.14 Statement of Difficulties Encountered

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

1.15 Quotations

The application is also accompanied by a Non-Technical Summary of the EIAR, which is laid out in a similar, but condensed format to the main EIAR. The structure, presentation and the Non-Technical Summary of the EIAR, as well as the arrangements for public access, all facilitate the dissemination of the information contained in the EIAR. The core objective is to ensure that the public and local community are aware of the likely environmental impacts of the Proposed Development prior to the granting of consent.

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

The EIA Regulations require that difficulties such as technical deficiencies, lack of information or knowledge encountered in compiling any specified information for the EIAR be described.

3 PLANNING AND POLICY CONTEXT

3.1 Introduction

This chapter considers the Proposed Development in terms of legislative context and in relation to strategic, national, regional and local level planning policies and objectives.

3.1.1 Quality Assurance and Competence

This chapter was prepared by Rachel Redmond, Environmental Consultant with DNV. Rachel has a Bachelor of Science (Hons) in Environmental Science from University College Cork and a Sp.Dip in Corporate Environmental Planning. Rachel has over 4 years of experience as an environmental consultant preparing Environmental Impact Assessment Reports of a similar scale and nature to the Proposed Development.

This chapter has been reviewed by Mairéad Foran, Senior Environmental Consultant with DNV. Mairéad Foran has a B.A. (Moderatorship) in Environmental Sciences from Trinity College Dublin, and an Advanced Diploma in Planning and Environmental Law from King's Inns College, Dublin. Mairéad has over 6 years professional experience as an Environmental Consultant and experience working on a large number of EIARs and EIA Screening Reports for projects of a similar scale to that of the Proposed Development.

This chapter has been reviewed and approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

3.2 European and National Policy and Legislation

Directive 2011/92/EU (as amended by Directive 2014 /52/EU) (together, the EIA Directive) was enacted as a means to assess the effects of projects on the environment, and to properly ensure that any potential significant effects are assessed before a project proceeds.

Article 1(2)(g) of Directive 2011/92/EU, as amended by Directive 2014/52/EU, defines Environmental Impact Assessment (EIA) as 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.'

Annex 1 of the EIA Directive defines mandatory projects that require an Environmental Impact Assessment Report (EIAR) (formerly EIS) and Annex II of the EIA Directive lists projects which do not necessarily have significant effects but can be subject to case-by-case analysis or thresholds to be determined by member states.

The requirement for a statutory Environmental Impact Assessment (EIA) is set out in the mandatory and discretionary provisions of the Planning and Development Act, 2000 (as amended) (the Act) and in Schedule 5 of the Planning and Development Regulations, 2001 as amended (the Regulations).

Projects listed in Schedule 5, Part 1, of the Regulations, will be subject to mandatory assessment (Article 4(1) of Directive 2011/92/EU, as amended by Directive 2014/52/EU) as they are deemed as projects which are likely to have a significant effect. The Proposed Development is not listed as a project under Schedule 5, Part 1, of the Regulations.

Schedule 5, Part 2 of the Planning and Development Regulations 2001 as amended, defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

"Schedule 5, Part 2 - Infrastructure projects

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

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.

(In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)

The Proposed Development does constitute an "urban development" as it is a housing development. According to the Interpretation of Definitions of Project Categories of Annex I and II Document (European Commission, 2015), "*Housing developments, in particular, are frequently included in the 'urban development projects' category*".

The total area of the Proposed Development site is approximately 18.6 hectares. It is greater than the 10-hectare threshold for a built-up area and accordingly, an EIAR is being prepared as part of this application.

In May 2022, the EPA published the Final "*Guidelines on the information to be contained in Environmental Impact Assessment Reports".* The Guidelines have been updated following the

introduction of transposing legislation and are now formally adopted. The preparation of these updated Guidelines has involved extensive consultation. Participants in this consultation included government departments, national agencies, regional and local government, independent statutory bodies, non-governmental organisations, members of the public, developers and bodies representing various professional, industrial and sectoral groups. The Guidelines emphasise the importance of the methods used in the preparation of an EIAR to ensure that the information presented is adequate and relevant. This document has been used in the preparation of this EIAR.

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

(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 (respectively, the Habitats Directive and the Birds Directive)

(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)

Section 172 of the Planning and Development Act 2001, as amended, provides the legislative basis for mandatory EIA. It states the following:

"*An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either —*

(a) the proposed development would be of a class specified in —

i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either I) such development [would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or

(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(ii) Part 2 [(other than subparagraph (a) of paragraph 2)] of Schedule 5 of the Planning and Development Regulations 2001 and either —

(I) such development [would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or

(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(b) (i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but [does not equal or exceed, as the case may be,] the relevant quantity, area or other limit specified in that Part, and

(ii) it is concluded, determined or decided, as the case may be, —

(I) by a planning authority, in exercise of the powers conferred on it by this Act or the Planning and Development Regulations 2001 (S.I. No. 600 of 2001),

(II) by the Board, in exercise of the powers conferred on it by this Act or those regulations,

(III) by a local authority in exercise of the powers conferred on it by regulation 120 of those regulations,

(IV) by a State authority, in exercise of the powers conferred on it by regulation 123A of those regulations,

(V) in accordance with section 13A of the Foreshore Act, by the appropriate Minister (within the meaning of that Act), or

(VI) by the Minister for Communications, Climate Action and Environment, in exercise of the powers conferred on him or her by section 8A of the Minerals Development Act 1940,

that the proposed development is likely to have a significant effect on the environment."

In some cases, Member States have also established "*exclusion"* or "*negative*" lists specifying thresholds and criteria below which EIA is never required or below which a simplified EIA procedure applies. There may be exceptions to the negative thresholds, for example, for pro jects in defined sensitive locations. Such exceptions will apply in the case of Habitats Directive 92/43/EEC (as amended) assessments. The use of exclusion lists, defining thresholds below which EIA is never required, is very limited in the EU Member States.

3.3 National and Regional Planning Policy Context

3.3.1 National Planning Context

3.3.1.1 National Framework Plan (NFP) First Revision

The NPF is the Government's high-level strategic plan for shaping the future growth and development of Ireland to the year 2040. The NPF is published together with a 10-year national investment plan as one vision – Project Ireland 2040, meaning that implementation of the Framework will be fully supported by the Government's investment strategy for public capital investment and investment by the State sector in general. The NPF outlines key future planning and development place making policies for the Eastern and Midland Regions, including a major new policy emphasis on renewing and developing existing settlements with the target of achieving at least 40% of all new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and/or brownfield sites, such as the Proposed Development site.

Project Ireland 2040 includes a vision and strategy that is supported by a series of National Policy Objectives and will be aligned with the Government's ten-year National Investment Plan. The Strategy promotes:

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

To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing built-up areas. Within Dublin, the NPF states that the city needs to '*accommodate a greater proportion of the growth it generates within its metropolitan boundaries and to offer improved housing choice*.'

National Policy **Objective 12** in this regards states:

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

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

National Policy **Objective 20** in this regards states:

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

National Policy **Objective 22** in this regards states:

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

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

National Policy **Objective 43**:

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

As defined in the NPF, ideally future homes will be located in places that can support sustainable development - places which support growth, innovation and the efficient provision of infrastructure, are accessible to a range of local services, can encourage the use of public transport, walking and cycling, and help tackle climate change.

The Proposed Development supports the polices and goals outlined in the NPF. The development is located in an area well served by the necessary infrastructure, and which is zoned specifically for uses of this nature.

Further details on how the Proposed Development supports and complies with planning policy and legislation are detailed in the planning report by Armstrong Fenton Associates submitted separately as part of this application.

3.3.1.2 Design for Urban Roads and Streets (DMURS)

The Design Manual for Urban Roads and Streets was adopted in 2013 and updated in 2022 set out design guidance and standards for constructing new and reconfiguring existing urban roads and streets in Ireland. It also outlines practical design measures to encourage more sustainable travel patterns in urban areas. DMURS aims to end the practice of designing streets as traffic corridors, and instead focus on the needs of pedestrians, cyclists, and public transport users. The manual sets out design guidance and standards for constructing new and reconfiguring existing urban roads and streets in Ireland. Incorporating good planning and design practice and focus on the public realm, it also outlines practical design measures to encourage more sustainable travel patterns in urban areas.

The principal design guidance of DMURS has been considered in the design of the Proposed Development. A Traffic and Transport Assessment was completed by Pinnacle, which considers that the Proposed Development is consistent with the principles and guidance outlined in the Design Manual for Urban Roads and Streets (DMURS).

3.3.1.3 Sustainable Urban Housing: Design Standards for New Apartments 2023 - Guidelines for Planning Authorities

The Sustainable Urban Housing Design Standards for New Apartments were published by the Minister for Housing, Planning and Local Government and published in March 2018 and updated in 2020 and 2023 under section 28 of the Planning and Development Acts 2000 as amended.

Planning applications which provide for new apartment development must have regard to the Apartment Guidelines 2023. The Guidelines set out a number of Specific Planning Policy Requirements (SPPR), should any conflict arise between the SPPRs and the respective Development Plan the SPPRs take precedence.

3.3.1.4 Urban Development and Building Height Guidelines (2018)

The Urban Development and Building Heights Guidelines were adopted in 2018 and set out national planning policy guidelines on building heights in urban areas in response to specific policy objectives set out in the National Planning Framework and Project Ireland 2040. The Guidelines promote an increase in building height in the right locations and set out certain criteria and requirements for developments of increased height.

In relation to individual Planning Applications the Guidelines identify that there is a presumption in favour of buildings of increased height in our town/city cores and in other urban locations with good public transport accessibility. In addition, Guidelines set out national planning policy that '*Applies those requirements in setting out relevant planning criteria for considering increased building height in various locations but principally (a) urban and city-centre locations and (b) suburban and wider town locations*.' The Guidelines seek to secure

'…*compact and sustainable urban growth'* which means '..*either reusing or redeveloping existing sites and buildings, in well serviced urban locations, particularly those served by good public transport and supporting services, including employment opportunities'*.

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

3.3.1.5 Guidelines for Planning Authorities on 'The Planning System and Flood Risk Management (November 2009)'

The Planning System and Flood Risk Management Guidelines were published by the Minister for the Environment, Heritage & Local Government in November 2009 under Section 28 of the Planning & Development Acts 2000 to 2022.

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

Details on how the Proposed Development supports and complies with The Planning System and Flood Risk Management Guidelines are detailed in the site-specific flood risk assessment (SSFRA) prepared by Kilgallen & Partners Consulting Engineers (2025), submitted separately as part of this application. The SSFRA concludes that the Proposed Development is appropriate at the site and with an overall low risk of fluvial, groundwater, coastal and pluvial flooding (Kilgallen & Partners Consulting Engineers, 2025).

3.3.1.6 Delivering Homes, Building Communities 2025-2030

The Government of Ireland has recently published "*Homes, Building Communities: An Action Plan on Housing Supply and Targeting Homelessness, 2025–2030*", which supersedes the previous "Housing for All" strategy outlined below. This updated plan sets out a target to deliver 300,000 new homes by 2030, including provisions for social and affordable housing. It adopts a whole-of-government approach, emphasising accelerated delivery, major investment in infrastructure, and comprehensive planning reform. The plan also places a strong focus on tackling homelessness, with dedicated actions and increased social housing output. Key measures include the implementation of the Planning and Development Act 2024, the identification of Urban Development Zones, and the adoption of modern construction methods. The strategy is underpinned by substantial State investment and aims to support sustainable, inclusive communities while addressing housing affordability and supply challenges nationwide.

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

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

The overall aim of Housing for All is : "*Everyone in the State should have access to a home to purchase or rent at an affordable price, built to a high standard and in the right place, offering a high quality of life*." Housing for All provides four pathways to achieving four overarching objectives:

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

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

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

3.3.2 Regional Planning Context

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

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

The Strategy identifies that the Region '*is home to over 800,000 households, with 4 out of 5 living in conventional housing while apartments account for around 18% or our housing stock. One of the challenges facing the Region is the continued growth rates of household formation coupled with a severe slowdown in the development of new housing stock during the economic recession, resulting in housing supply and affordability pressures in both sale and rental markets, particularly in Dublin and urban areas but affecting all of the Region'*.

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

> RPO 4.3: to "*support the consolidation and reintensification of infill / brownfield sites to provide high density and people intensive uses within the existing built up area of Dublin city and suburbs and ensure that the development of future development areas*

is co-ordinated with the delivery of key water infrastructure and public transport projects."

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

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

3.4 Local Policy

3.4.1 South Dublin County Development Plan 2022-2028

Under Section 9(1) of the Planning and Development Act 2000, as amended, every planning authority is obliged to make a development plan every six years. The South Dublin County Development Plan 2022-2028 is the current statutory plan for the region, against which planning applications will be considered.

Section 10(1) of the Planning and Development Act 2000, as amended, states that the purpose of a Development lan is to set out "*an overall strategy for the proper planning and sustainable development"* in a particular functional area.

The strategic vision for the South Dublin County Development Plan 2022-2028 is that *"In 2028 South Dublin will be a place that our communities are proud of, that our businesses can thrive in and that will help us to live greener and healthier lives."*

The South Dublin County Development Plan 2022-2028 sets the land use zoning objectives and uses that would be permissible in principle and/or open for consideration within each land use. The entirety of the Proposed Development site is located on land zoned objective "*RES-N".* '

The zoning for Objective '"*RES-N*' includes ". "*To provide for new residential communities in accordance with approved area plans*".

Residential use is classed as permitted in principle for these zones as per the South Dublin County Development Plan 2022 – 2028.

3.4.1.1 Policy in relation to Residential Development

Chapter 6 housing of the South Dublin County Development Plan 2022-2028 outlines that South Dublin will need almost 15,500 new homes by the end of 2028, over 2,500 per year.

It is the policy of the South Dublin County Development Plan 2022-2028 :

H2 Objective 4: *To promote lifetime housing standards in new homes built in the County in accordance with best practice;*

H7 Objective 1*: To promote a high quality of design and layout in new residential development and to ensure a high-quality living environment for residents, in terms of the standard of individual dwelling units and the overall layout and appearance of the development in accordance 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, Guidelines for Planning Authorities (2020), or as may be updated and Chapter 12: Implementation and Monitoring

H7 Objective 2: *To ensure that new residential developments incorporate energy efficiency measures and promote innovation in renewable energy opportunities.*

H7 Objective 4*:To ensure that residential development provides an integrated and balanced approach to movement, placemaking and streetscape design in accordance with the requirements of the Design Manual for Urban Roads and Streets, DTTAS and DEHLG (2013, updated 2019)*

H10 Objective 1: *To promote the provision of high-quality houses and apartments / duplexes within sustainable neighbourhoods by achieving the appropriate quantitative and qualitative standards, in accordance with Ministerial Guidelines and as set out in Chapter 12: Implementation and Monitoring.*

H13 Objective 1*:To promote and support residential consolidation and sustainable intensification at appropriate locations and to encourage consultation with existing communities and other stakeholders.*

Details on how the Proposed Development supports and complies with development managed standards are detailed in the Planning Report and Statement of Consistency by Armstrong Fenton Associates submitted separately as part of this application. Boherboy Road is not currently covered by a dedicated Local Area Plan. However, development in the area is guided by the South Dublin County Development Plan 2022–2028 and, where applicable, the Fortunestown Local Area Plan (2012), alongside national and regional planning policy.

3.5 Conclusion

Having regard to the policies and objectives of:

- European and National Policy;
- National Planning Framework;
- Regional and Spatial and Economic Strategies;
- South Dublin County Council Development Plan 2022-2028.

It is considered that the Proposed Development complies with the relevant national and regional and local planning policy context. As such, it is considered that the Proposed Development accords with the proper planning and sustainable development of the area.

3.6 References

Directive 2011/92/EU, as amended by Directive 2014/52/EU (the EIA Directive)

Guidelines for Planning Authorities on the Planning System and Flood Risk Management (Department of the Environment, Heritage and Local Government, 2009)

South Dublin County Council Development Plan 2022-2028

National Planning Framework (Project Ireland 2040)

Planning and Development Act 2000, as amended

Planning and Development Regulations 2001, as amended

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

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(ii) Part 2 [(other than subparagraph (a) of paragraph 2)] of Schedule 5 of the Planning and Development Regulations 2001 and either —

(I) such development [would equal or exceed, as the case may be, any relevant quantity, area or other limit specified in that Part, or

(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(b) (i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but [does not equal or exceed, as the case may be,] the relevant quantity, area or other limit specified in that Part, and

(ii) it is concluded, determined or decided, as the case may be, —

(I) by a planning authority, in exercise of the powers conferred on it by this Act or the Planning and Development Regulations 2001 (S.I. No. 600 of 2001),

(II) by the Board, in exercise of the powers conferred on it by this Act or those regulations,

(III) by a local authority in exercise of the powers conferred on it by regulation 120 of those regulations,

(IV) by a State authority, in exercise of the powers conferred on it by regulation 123A of those regulations,

(V) in accordance with section 13A of the Foreshore Act, by the appropriate Minister (within the meaning of that Act), or

(VI) by the Minister for Communications, Climate Action and Environment, in exercise of the powers conferred on him or her by section 8A of the Minerals Development Act 1940,

that the proposed development is likely to have a significant effect on the environment."

In some cases, Member States have also established "*exclusion"* or "*negative*" lists specifying thresholds and criteria below which EIA is never required or below which a simplified EIA procedure applies. There may be exceptions to the negative thresholds, for example, for pro jects in defined sensitive locations. Such exceptions will apply in the case of Habitats Directive 92/43/EEC (as amended) assessments. The use of exclusion lists, defining thresholds below which EIA is never required, is very limited in the EU Member States.

3.3 National and Regional Planning Policy Context

3.3.1 National Planning Context

3.3.1.1 National Framework Plan (NFP) First Revision

The NPF is the Government's high-level strategic plan for shaping the future growth and development of Ireland to the year 2040. The NPF is published together with a 10-year national investment plan as one vision – Project Ireland 2040, meaning that implementation of the Framework will be fully supported by the Government's investment strategy for public capital investment and investment by the State sector in general. The NPF outlines key future planning and development place making policies for the Eastern and Midland Regions, including a major new policy emphasis on renewing and developing existing settlements with the target of achieving at least 40% of all new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and/or brownfield sites, such as the Proposed Development site.

Project Ireland 2040 includes a vision and strategy that is supported by a series of National Policy Objectives and will be aligned with the Government's ten-year National Investment Plan. The Strategy promotes:

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

To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing built-up areas. Within Dublin, the NPF states that the city needs to '*accommodate a greater proportion of the growth it generates within its metropolitan boundaries and to offer improved housing choice*.'

National Policy **Objective 12** in this regards states:

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

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

National Policy **Objective 20** in this regards states:

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

National Policy **Objective 22** in this regards states:

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

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

National Policy **Objective 43**:

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

As defined in the NPF, ideally future homes will be located in places that can support sustainable development - places which support growth, innovation and the efficient provision of infrastructure, are accessible to a range of local services, can encourage the use of public transport, walking and cycling, and help tackle climate change.

The Proposed Development supports the polices and goals outlined in the NPF. The development is located in an area well served by the necessary infrastructure, and which is zoned specifically for uses of this nature.

Further details on how the Proposed Development supports and complies with planning policy and legislation are detailed in the planning report by Armstrong Fenton Associates submitted separately as part of this application.

3.3.1.2 Design for Urban Roads and Streets (DMURS)

The Design Manual for Urban Roads and Streets was adopted in 2013 and updated in 2022 set out design guidance and standards for constructing new and reconfiguring existing urban roads and streets in Ireland. It also outlines practical design measures to encourage more sustainable travel patterns in urban areas. DMURS aims to end the practice of designing streets as traffic corridors, and instead focus on the needs of pedestrians, cyclists, and public transport users. The manual sets out design guidance and standards for constructing new and reconfiguring existing urban roads and streets in Ireland. Incorporating good planning and design practice and focus on the public realm, it also outlines practical design measures to encourage more sustainable travel patterns in urban areas.

The principal design guidance of DMURS has been considered in the design of the Proposed Development. A Traffic and Transport Assessment was completed by Pinnacle, which considers that the Proposed Development is consistent with the principles and guidance outlined in the Design Manual for Urban Roads and Streets (DMURS).

3.3.1.3 Sustainable Urban Housing: Design Standards for New Apartments 2023 - Guidelines for Planning Authorities

The Sustainable Urban Housing Design Standards for New Apartments were published by the Minister for Housing, Planning and Local Government and published in March 2018 and updated in 2020 and 2023 under section 28 of the Planning and Development Acts 2000 as amended.

Planning applications which provide for new apartment development must have regard to the Apartment Guidelines 2023. The Guidelines set out a number of Specific Planning Policy Requirements (SPPR), should any conflict arise between the SPPRs and the respective Development Plan the SPPRs take precedence.

3.3.1.4 Urban Development and Building Height Guidelines (2018)

The Urban Development and Building Heights Guidelines were adopted in 2018 and set out national planning policy guidelines on building heights in urban areas in response to specific policy objectives set out in the National Planning Framework and Project Ireland 2040. The Guidelines promote an increase in building height in the right locations and set out certain criteria and requirements for developments of increased height.

In relation to individual Planning Applications the Guidelines identify that there is a presumption in favour of buildings of increased height in our town/city cores and in other urban locations with good public transport accessibility. In addition, Guidelines set out national planning policy that '*Applies those requirements in setting out relevant planning criteria for considering increased building height in various locations but principally (a) urban and city-centre locations and (b) suburban and wider town locations*.' The Guidelines seek to secure

'…*compact and sustainable urban growth'* which means '..*either reusing or redeveloping existing sites and buildings, in well serviced urban locations, particularly those served by good public transport and supporting services, including employment opportunities'*.

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

3.3.1.5 Guidelines for Planning Authorities on 'The Planning System and Flood Risk Management (November 2009)'

The Planning System and Flood Risk Management Guidelines were published by the Minister for the Environment, Heritage & Local Government in November 2009 under Section 28 of the Planning & Development Acts 2000 to 2022.

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

Details on how the Proposed Development supports and complies with The Planning System and Flood Risk Management Guidelines are detailed in the site-specific flood risk assessment (SSFRA) prepared by Kilgallen & Partners Consulting Engineers (2025), submitted separately as part of this application. The SSFRA concludes that the Proposed Development is appropriate at the site and with an overall low risk of fluvial, groundwater, coastal and pluvial flooding (Kilgallen & Partners Consulting Engineers, 2025).

3.3.1.6 Delivering Homes, Building Communities 2025-2030

The Government of Ireland has recently published "*Homes, Building Communities: An Action Plan on Housing Supply and Targeting Homelessness, 2025–2030*", which supersedes the previous "Housing for All" strategy outlined below. This updated plan sets out a target to deliver 300,000 new homes by 2030, including provisions for social and affordable housing. It adopts a whole-of-government approach, emphasising accelerated delivery, major investment in infrastructure, and comprehensive planning reform. The plan also places a strong focus on tackling homelessness, with dedicated actions and increased social housing output. Key measures include the implementation of the Planning and Development Act 2024, the identification of Urban Development Zones, and the adoption of modern construction methods. The strategy is underpinned by substantial State investment and aims to support sustainable, inclusive communities while addressing housing affordability and supply challenges nationwide.

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

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

The overall aim of Housing for All is : "*Everyone in the State should have access to a home to purchase or rent at an affordable price, built to a high standard and in the right place, offering a high quality of life*." Housing for All provides four pathways to achieving four overarching objectives:

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

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

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

3.3.2 Regional Planning Context

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

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

The Strategy identifies that the Region '*is home to over 800,000 households, with 4 out of 5 living in conventional housing while apartments account for around 18% or our housing stock. One of the challenges facing the Region is the continued growth rates of household formation coupled with a severe slowdown in the development of new housing stock during the economic recession, resulting in housing supply and affordability pressures in both sale and rental markets, particularly in Dublin and urban areas but affecting all of the Region'*.

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

> RPO 4.3: to "*support the consolidation and reintensification of infill / brownfield sites to provide high density and people intensive uses within the existing built up area of Dublin city and suburbs and ensure that the development of future development areas*

is co-ordinated with the delivery of key water infrastructure and public transport projects."

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

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

3.4 Local Policy

3.4.1 South Dublin County Development Plan 2022-2028

Under Section 9(1) of the Planning and Development Act 2000, as amended, every planning authority is obliged to make a development plan every six years. The South Dublin County Development Plan 2022-2028 is the current statutory plan for the region, against which planning applications will be considered.

Section 10(1) of the Planning and Development Act 2000, as amended, states that the purpose of a Development lan is to set out "*an overall strategy for the proper planning and sustainable development"* in a particular functional area.

The strategic vision for the South Dublin County Development Plan 2022-2028 is that *"In 2028 South Dublin will be a place that our communities are proud of, that our businesses can thrive in and that will help us to live greener and healthier lives."*

The South Dublin County Development Plan 2022-2028 sets the land use zoning objectives and uses that would be permissible in principle and/or open for consideration within each land use. The entirety of the Proposed Development site is located on land zoned objective "*RES-N".* '

The zoning for Objective '"*RES-N*' includes ". "*To provide for new residential communities in accordance with approved area plans*".

Residential use is classed as permitted in principle for these zones as per the South Dublin County Development Plan 2022 – 2028.

3.4.1.1 Policy in relation to Residential Development

Chapter 6 housing of the South Dublin County Development Plan 2022-2028 outlines that South Dublin will need almost 15,500 new homes by the end of 2028, over 2,500 per year.

It is the policy of the South Dublin County Development Plan 2022-2028 :

H2 Objective 4: *To promote lifetime housing standards in new homes built in the County in accordance with best practice;*

H7 Objective 1*: To promote a high quality of design and layout in new residential development and to ensure a high-quality living environment for residents, in terms of the standard of individual dwelling units and the overall layout and appearance of the development in accordance 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, Guidelines for Planning Authorities (2020), or as may be updated and Chapter 12: Implementation and Monitoring

H7 Objective 2: *To ensure that new residential developments incorporate energy efficiency measures and promote innovation in renewable energy opportunities.*

H7 Objective 4*:To ensure that residential development provides an integrated and balanced approach to movement, placemaking and streetscape design in accordance with the requirements of the Design Manual for Urban Roads and Streets, DTTAS and DEHLG (2013, updated 2019)*

H10 Objective 1: *To promote the provision of high-quality houses and apartments / duplexes within sustainable neighbourhoods by achieving the appropriate quantitative and qualitative standards, in accordance with Ministerial Guidelines and as set out in Chapter 12: Implementation and Monitoring.*

H13 Objective 1*:To promote and support residential consolidation and sustainable intensification at appropriate locations and to encourage consultation with existing communities and other stakeholders.*

Details on how the Proposed Development supports and complies with development managed standards are detailed in the Planning Report and Statement of Consistency by Armstrong Fenton Associates submitted separately as part of this application. Boherboy Road is not currently covered by a dedicated Local Area Plan. However, development in the area is guided by the South Dublin County Development Plan 2022–2028 and, where applicable, the Fortunestown Local Area Plan (2012), alongside national and regional planning policy.

3.5 Conclusion

Having regard to the policies and objectives of:

- European and National Policy;
- National Planning Framework;
- Regional and Spatial and Economic Strategies;
- South Dublin County Council Development Plan 2022-2028.

It is considered that the Proposed Development complies with the relevant national and regional and local planning policy context. As such, it is considered that the Proposed Development accords with the proper planning and sustainable development of the area.

3.6 References

Directive 2011/92/EU, as amended by Directive 2014/52/EU (the EIA Directive)

Guidelines for Planning Authorities on the Planning System and Flood Risk Management (Department of the Environment, Heritage and Local Government, 2009)

South Dublin County Council Development Plan 2022-2028

National Planning Framework (Project Ireland 2040)

Planning and Development Act 2000, as amended

Planning and Development Regulations 2001, as amended

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

4 POPULATION AND HUMAN HEALTH

4.1 Introduction

This chapter considers the potential effects of the Proposed Development on human beings, living, working and visiting in the vicinity of the site. The chapter details the potential direct and indirect effects of the Proposed Development on the local population and human health.

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

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

4.1.1 Quality Assurance and Competency of Experts

This chapter was prepared by Rachel Redmond, Environmental Consultant with DNV. Rachel has a Bachelor of Science (Hons) in Environmental Science from University College Cork and a Sp.Dip in Corporate Environmental Planning. Rachel has over 4 years of experience as an environmental consultant preparing Environmental Impact Assessment Reports of a similar scale and nature to the Proposed Development.

This chapter was reviewed by Gráinne Ryan, Principal EIA Consultant at DNV. Gráinne is an Environmental Consultant with 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Gráinne has a B.A, in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been reviewed and approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

4.2 Study Methodology

A desk-based study was undertaken in November 2025 to assess information regarding population, age structure, economic activity, employment, and unemployment within the vicinity of the Proposed Development. This study was undertaken in accordance with the Guidelines on the information to be contained in Environmental Impact Assessment Reports, EPA (2022).

The 2022 Census of Population was held on Sunday the 3rd of April 2022. The preliminary results were released on the 23rd of June 2022 with the remaining results being published over several months starting in April 2023. The complete set of results has now been published.

The scope of this evaluation is based on a review of data available from the Central Statistics Office (CSO), legislation, guidance documents and EIARs.

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

- Population demographics;
- Socio economic impacts;
- Water quality;
- Air quality;
- Noise and vibration;
- Traffic and transport; and
- General amenity and tourism.

4.2.1 Study Area

No formal national guidance is available on the appropriate study area to focus the assessment of population and human health. The Institute of Public Health in Ireland has issued a document “Health Impact Assessment Guidance” (2021) which describes a number of different geographic scales that health can be measured within varying from neighbouring community to international. As such, professional judgement has been applied in determining the appropriate study areas. Due to the wide reaching and often transient nature of people, the potential effects of the Proposed Development can be experienced at different scales. For example, the impact of air quality on human health will be experienced at a much smaller radius when compared to socio-economic impact which can be experienced at a community or regional level.

When choosing an appropriate study area for the potential effects on population and human health in this chapter, the extent of the area assessed varies. The Proposed Development is primarily located within Saggart Electoral Division (ED) with a portion of the site located within the Tallaght-Jobstown ED, therefore these EDs have been chosen as the study area (Figure 4-1).

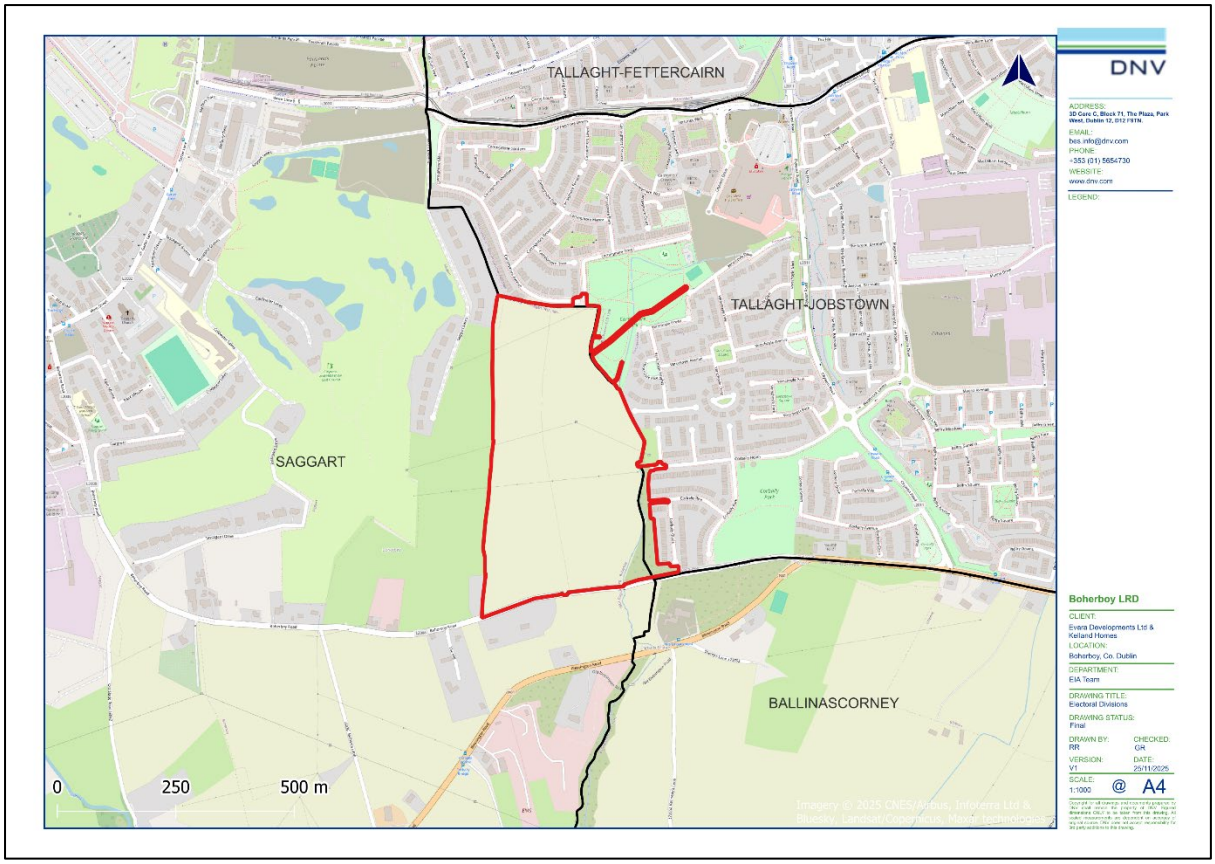


Figure 4-1 Map of Study Area

4.2.2 Information Sources

The principal sources of information are as follows.

- Census and employment information published by the Central Statistics Office (CSO);
- Dublin City Development Plan 2022-2028; and
- Ordinance Survey Ireland (OSI) mapping and aerial photography.

The Institute of Public Health in Ireland has issued a document “Health Impact Assessment Guidance” (2021) which details the link between human health and the built environment (Figure 5 2). This document also details the negative health impacts associated with unemployment. Unemployment affects both physical and mental health and is an important determinant of health inequalities in adults of working age. Unemployed people have a higher risk of lower levels of psychological wellbeing ranging from symptoms of depression and anxiety to self-harm and suicide. Unemployment can also impact other health determinants for example housing and nutrition. Based on this information, employment generated as a result of the Proposed Development has been assessed throughout this chapter.

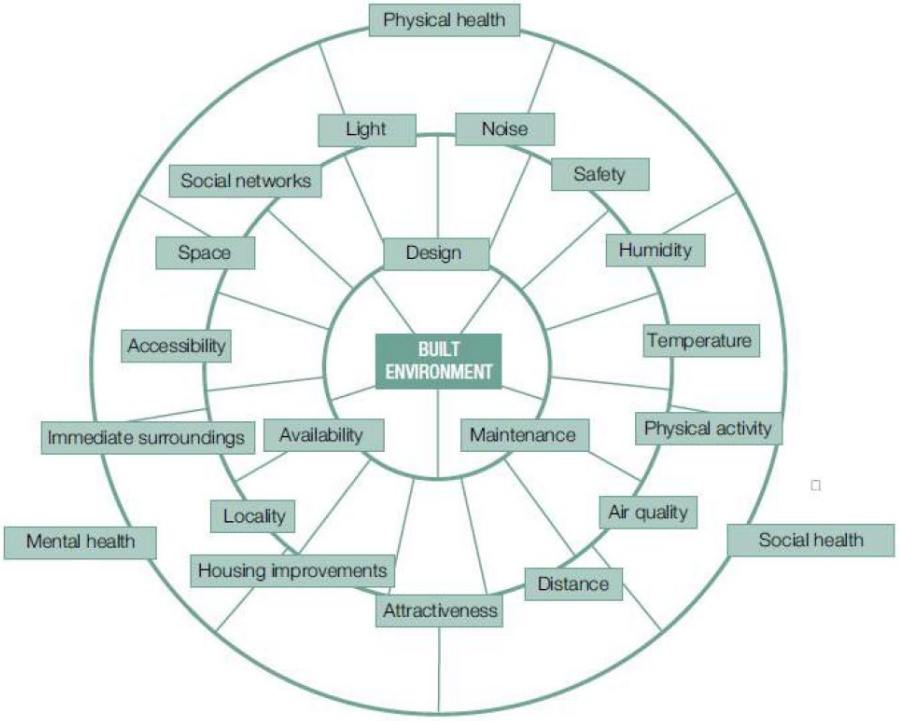


Figure 4-2 Health impact of the built environment (source: Institute of Public Health in Ireland)

The European Commission (EC) has published the "Guidance on The Preparation Of The Environmental Impact Assessment Report" (EC, 2017). This document defines human health as "a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the 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".

Technical chapters within the EIAR have also been reviewed when assessing the likely effects on population and human health. These include the relevant chapters relating to air quality, climate, noise and vibration, hydrology, traffic and transport and landscape and visual.

In line with the Environmental Protection Agency (EPA) Guidelines (2022) the information to be contained in Environmental Impact Assessment Reports, the terms used when quantifying the quality of effects have been detailed in Chapter 1.

4.3 The Existing and Receiving Environment (Baseline Situation)

4.3.1 Population and Demographics Analysis

The most recent population figures published by the Central Statistics Office (CSO) indicate that the combination of a net inward migration and high birth rates have resulted in the population of Ireland has exceeded five million for the first time since 1851. Population projections for Ireland up to 2046 anticipate a population of approximately five million under the most pessimistic scenario and over 6.7 million under the most optimistic scenario.

Population projections for Northern Ireland up to 2034 anticipate a population of approximately two million.

The site is mostly located within the Electoral Division (ED) Saggart ED, with a portion of the site located within the Tallaght-Jobstown ED.

Table 5-1 shows population of the Saggart ED, Tallaght-Jobstown ED, South Dublin County Council (SDCC) Jurisdiction and the State as recorded during the 2016 and 2022 Census, as well as the percentage change in population during this period to highlight overall residential patterns. Saggart ED has experienced an increase in population (+35%) which is more than the other areas assessed.

Table 4-1: Population Change in Saggart ED, Tallaght-Jobstown ED, Co. Dublin and Ireland from 2016 to 2022 (Source: CSO 2025)

Area	Population 2016 Census Data	Population 2022 Census Data	Change in Number of People	Percentage change in Population
Saggart	4,640	6,248	1,608	35
Tallaght-Jobstown	17,824	18,125	301	2
Co. Dublin	1,347,359	1,458,154	110,795	8
Ireland	4,761,865	5,149,139	387,274	8.1

4.3.2 Population and Age

Table 4-3 shows the breakdown of the population of Saggart ED, Tallaght-Jobstown ED, SDCC Jurisdiction and the State based on their age range. This table is further broken down into percentages of the population within these age ranges.

Table 4-2: Population categories by age in Saggart ED, Tallaght-Jobstown ED, SDCC Jurisdiction and the State

Age Range	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		Ireland	
	No. of People	% of People	No. of People	% of People	No. of People	% of People	No. of People	% of People
0-4 years	650	10.4	1,217	6.7	18,677	6.2	295,415	5.7
5-24 years	1,806	28.9	6,507	35.9	84,242	28.0	1,361,643	26.4
25-34 years	841	13.5	2,283	12.6	38,029	12.6	628,031	12.2
35-44 years	1,318	21.1	3,437	19	50,445	16.7	794,393	15.4
45-54 years	807	12.9	2,634	14.5	39,857	13.2	713,507	13.9
55-64 years	376	6.0	1,185	6.5	29,991	10.0	579,835	11.3
65-74 years	253	4.0	670	3.7	24,346	8.1	441,028	8.6
75 years and over	197	3.2	192	1.1	15,488	5.1	335,287	6.5
Total	**6,248**		**18,125**		**301,075**		**5,149,139**	

Tallaght-Jobstown ED has a lower percentage of people aged over 65 when compared with Saggart ED, SDCC Jurisdiction and the State. In Saggart ED, the largest portion of the population is aged 5-24 years reflecting 28.9% of the overall population which is slightly above the values for the State (26.44%). There are more people in Saggart ED aged 35-44 years (21.1%) when compared with Tallaght-Jobstown ED (19%), SDCC Jurisdiction (16.7%), and the State (15.4%).

4.3.3 Economic Activity and Employment

The labour force is defined as the number of people above the legal working age that are available to work. Table 4-4 shows the percentage of the population who were in the labour force during the 2022 census.

The number of people at work in Saggart ED (66%) which is higher than the average for Tallaght-Jobstown ED (58%) SDCC Jurisdiction (57.8%) and the State (56.09%). The number of people retired within the Saggart ED (8.7%) and Tallaght-Jobstown ED (5.5%) is less than that of the SDCC Jurisdiction (14.6%) and the State (15.9%). The number of people who are students within the Saggart ED (8.7%) is less than that of the Tallaght-Jobstown ED (13.3%), SDCC jurisdiction (10.9%) and the State (11.10%). The number of people who are long term unemployed is highest in Tallaght-Jobstown ED with 4.7% of people being long-term unemployed. No other economic status in Tallaght-Jobstown ED differs from the average in the SDCC Jurisdiction or the State by more than 3%.

Table 4-3: Principal economic status

Principle Economic Status	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
At work	2,856	66.0	7,791	58.0	137,111	57.8	2,320,297	56.1
Looking for first regular job	44	1.0	279	2.1	2,208	0.9	34,526	0.8
Short term unemployed	104	2.4	382	2.8	4,328	1.8	70,217	1.7
Long term unemployed	117	2.7	634	4.7	6,513	2.7	106,059	2.6
Student	382	8.8	1,791	13.3	25,822	10.9	459,275	11.1
Looking after home/family	268	6.2	1,004	7.5	15,269	6.4	272,318	6.6
Retired	375	8.7	736	5.5	34,562	14.6	657,790	15.9
Unable to work due to permanent sickness or disability	154	3.6	719	5.4	9,957	4.2	189,308	4.6
Other	25	0.6	91	0.7	1,316	0.6	27,062	0.7
Total	4,325		13,427		237,086		4,136,852	

The closest social welfare office to the Proposed Development which has figures available for the number of people on the Live Register / Unemployed is Tallaght Intreo Centre which covers the following areas: Tallaght, all of Dublin 24, Ballinascorney, Brittas, Citywest, Rathcoole Co. Dublin, Saggart Co. Dublin, Ballymore Eustace Co. Kildare, Crosschapel Co. Kildare, Kilteel Co. Kildare, Ballyknockan Co. Wicklow, Blessington Co. Wicklow, Hollywood

Co. Wicklow, Lacken Co. Wicklow, Manor Kilbride Co. Wicklow, Valleymount Co. Wicklow and part of Dublin 22 on the Tallaght Side of the N7.

The Live Register is used to provide a monthly series of the numbers of people (with some exceptions) registering for Jobseekers Benefit or Jobseekers Allowance or for various other statutory entitlements at local offices of the Department of Social Protection. At the time of carrying out this baseline assessment, the most recent information available is from March 2025. Table 4-5 shows that the number of people on the live register remains relatively fluctuating between -6.55% to +2.44%.

Table 4-4: Live Register for the previous 6 Months

Month	No. of people	Percentage change
2025 October	4,640	
2025 September	4,669	+0.62%
2025 August	4,783	+2.44%
2025 July	4,898	+2.40%
2025 June	4,577	-6.55%
2025 May	4,488	-1.94%

Table 4-6 shows the industries the people of Saggart ED work in compared with Tallaght-Jobstown ED, SDCC Jurisdiction and the State. The top three groups within Saggart ED include:

- Commerce and trade;
- Other; and
- Professional Services.

Table 4-5 Industry in which people work

Industry	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
Agriculture and forestry	23	0.8	4	0.1	245	0.2	82,228	3.54
Building and Construction	147	5.1	489	6.3	8,299	6.1	134,482	5.80
Manufacturing Industries	255	8.9	681	8.7	11,351	8.3	273,102	11.77
Commerce and Trade	735	25.7	2,103	27.0	38,964	28.4	552,642	23.82

Industry	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
Transport and Communication	435	15.2	902	11.6	15,916	11.6	212,383	9.15
Public Administration	98	3.4	328	4.2	7,851	5.7	131,639	5.67
Professional Services	559	19.6	1,910	24.5	33,900	24.7	568,105	24.48
Other	604	21.1	1,374	17.6	20,585	15.0	365,716	15.76
Total	**2,856**		**7,791**		**137,111**		**2,320,297**	

Table 4-7 shows the occupation of people in Saggart ED and Tallaght-Jobstown ED compared with SDCC Jurisdiction and the State. The top three groups within the Saggart ED are:

- Professional Occupations;
- Not Stated; and
- Associate Professional and Technical Occupations.

Table 4-6: Occupations of which People work

Occupation	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
Managers, Directors and Senior Officials	280	9.1	485	5.5	11,890	8.0	192,679	7.72
Professional Occupations	680	22.1	1,005	11.4	28,879	19.5	507,044	20.31
Associate Professional and Technical Occupations	354	11.5	775	8.8	18,661	12.6	292,273	11.71
Administrative and Secretarial Occupations	238	7.7	887	10.1	16,585	11.2	229,737	9.20
Skilled Trades Occupations	255	8.3	854	9.7	14,081	9.5	313,921	12.57
Caring, Leisure and Other Service Occupations	160	5.2	872	9.9	10,920	7.4	183,584	7.35
Sales and Customer Service Occupations	139	4.5	758	8.6	10,004	6.8	154,238	6.18
Process, Plant and Machine Operatives	206	6.7	758	8.6	9,273	6.3	172,521	6.91
Elementary Occupations	219	7.1	1,131	12.8	12,980	8.8	203,532	8.15

Occupation	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
Not stated	546	17.7	1,282	14.6	14,679	9.9	247,044	9.90
Total	3077		8807		147952		2,496,573	

In relation education, Table 4-7 shows the highest level of education completed in Saggart ED and Tallaght-Jobstown ED compared with the SDCC Jurisdiction and the State. The highest level of education in Saggart ED is Upper Secondary (15.3%) which also the highest level of education as in Tallaght-Jobstown ED (23.4%). This is followed by Honours bachelor degree, professional qualification or both within Saggart ED (14.3%), and Lower Secondary (15.4%) within Tallaght-Jobstown ED.

Table 4-7 Highest Level of Education Completed

Highest Level of Education Completed	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
No formal education	67	2.0	318	3.2	4357	2.3	81,280	2.4
Primary education	150	4.6	685	6.9	14401	7.5	251,219	7.4
Lower secondary	320	9.7	1521	15.4	24601	12.9	446,007	13.2
Upper secondary	503	15.3	2315	23.4	36440	19.1	613,478	18.1
Technical or vocational qualification	238	7.2	1037	10.5	15040	7.9	253,892	7.5
Advanced certificate/Completed apprenticeship	153	4.7	521	5.3	10297	5.4	190,268	5.6
Higher certificate	162	4.9	579	5.8	10475	5.5	187,488	5.5
Ordinary bachelor degree or national diploma	310	9.4	678	6.8	15204	8.0	272,535	8.1
Honours bachelor degree, professional qualification or both	470	14.3	867	8.8	25409	13.3	450,523	13.3
Postgraduate diploma or degree	421	12.8	588	5.9	21024	11.0	379,416	11.2
Doctorate(Ph.D) or higher	41	1.2	34	0.3	1680	0.9	38,212	1.1
Not stated	451	13.7	764	7.7	11866	6.2	220,311	6.5
Total	**3,286**		**9,907**		**190,794**		**3,384,629**	

4.3.4 Deprivation Indices

In addition, the Pobal HP Deprivation Indices was reviewed for Saggart ED and Tallaght-Jobstown ED The deprivation index and relevant information is included in Table 4-9 below.

Table 4-8: Pobal HP Deprivation Indices

Pobal Deprivation Indices	Saggart ED	Tallaght-Jobstown ED
Pobal HP Index 2022	-1.39	-8.15
Pobal HP Description 2022	Marginally Below Average	Marginally Below Average
Population 2022	476	18,125
Age Dependency Ratio 2022 %	34.24	30.68
Lone Parent Ratio 2022 %	5.45	35.52
Prop. Primary Education Only 2022 %	12.95	10.97
Proportion at Third Level Education 2022 %	34.17	30.03
Unemployment Rate - Male	7.63	14.60
Unemployment Rate - Female	5.21	13.89

The study area is described as being 'marginally below average' deprivation levels.

4.3.5 Human Health

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

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

Statistics for general health were assessed for the study area. Table 4-10 shows that 44.5% of people within Saggart ED have stated that they have "very good" health, this is lower than that of Tallaght-Jobstown ED (52.3%), SDCC Jurisdiction (53.5%) and the State (53.2%). The number of "Not Stated" responses are also much higher within the Saggart ED (

Table 4-9: Health Status

General Health	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
Very Good	2,780	44.5	9,485	52.3	160,979	53.5	2,740,994	53.2
Good	1,550	24.8	5,316	29.3	88,984	29.6	1,527,027	29.7
Fair	415	6.6	1,555	8.6	24,951	8.3	444,895	8.6
Bad	55	0.9	270	1.5	4,369	1.5	72,556	1.4

General Health	Saggart ED		Tallaght-Jobstown ED		SDCC Jurisdiction		State	
	No. of People	%	No. of People	%	No. of People	%	No. of People	%
Very Bad	22	0.4	65	0.4	998	0.3	16,843	0.3
Not Stated	1,426	22.8	1,434	7.9	20,794	6.9	346,824	6.7
Total	**6,248**		**18,125**		**301,075**		**5,149,139**	

4.3.6 Social Health

According to the World Health Organisation, poor social and economic circumstances affect health throughout life. Good health involves reducing levels of educational failure, reducing insecurity and unemployment, and improving housing standards. Health is influenced, either positively or negatively, by a variety of factors. Some of these factors are genetic or biological and are relatively fixed. '*Social determinants of health* 'arise from the social and economic conditions in which people live. They are not so fixed such as type of housing and environments, access to health or education services, incomes generated and the type of work people do, can all influence a person's health, and the lifestyle decisions people make.

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

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

Figure 4-2 below presents the social determinants of health adapted from Dalghren and Whitehead (1991) and Grant and Barton (2006) as presented in Healthy Ireland.

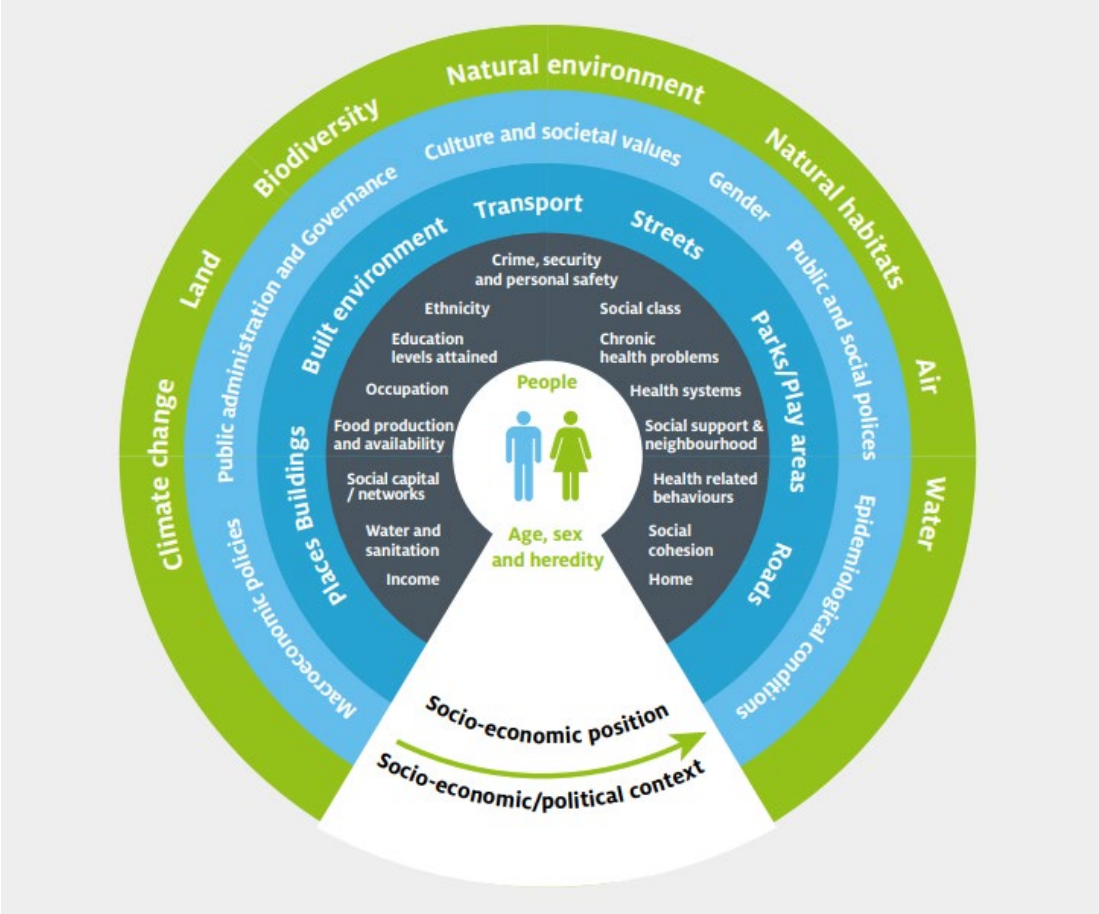


Figure 4-3 Social Determinants of Health (Healthy Ireland, DOH 2013)

4.3.7 Amenities

Healthcare Facilities

The closest hospital to the site is Tallaght University Hospital, located approximately 3.42km northeast of the site. Citywest Medical, Centric Health is located approximately 200m northeast of the site.

Education Facilities

Cocoon Childcare Citywest is located approximately 602m east of the site. The closest national school to the site is St Mary's National School Saggart located west of the site. The closest secondary school to the site is Coláiste Pobail Fóla located northwest of the site.

Sports and Recreation

There are a number of sports and outdoor facilities located in the vicinity of the Proposed Development including Corbally Park located approximately 219m east of the site. Carrigmore Park borders the site to the north of the site. There are a number of golf courses located southwest of the site, including Slade Valley Golf Club located approximately 3.3km from the site. St Mary's GAA club is located approximately 700m west of the site.

4.3.8 Receptor Sensitivity

The sensitivity of the local area and population as determined considering the above examination of the local area and population, and the IEMA Guide to Determining Significance for Human Health in Environmental Impact Assessment.

Table 4-10: Sensitivity Determination

Criteria	Classification	Risk Category	Justification
Deprivation	Marginally Below Average	Moderate	The deprivation index for the area is described as "marginally below average".
Resource Sharing	Sufficient	Low	It is considered that there will be sufficient resources in the area to share with the Proposed Development.
Inequalities	Moderate	Moderate	The local area has a majority of "very good" or "good" health (69.3%) within Saggart ED, and 81.6% within Tallaght-Jobstown ED. The majority of the population in both EDs are "at work".
Community Outlook	Ambivalent	Low	The site is located on a greenfield site, surrounded by existing residential developments. It is expected that the local population would have a neutral outlook towards the Proposed Development.
Daily Activities	Slightly limited	Low	3.6% of the population within Saggart ED identifies as being unable to work due to permanent sickness or disability and 5.4% identify the same within Tallaght-Jobstown ED.
Care Taking	Some care required	Low	With 3.6% of the population being unable to work due to permanent sickness or disability in Saggart ED and 5.4% in Tallaght-Jobstown ED, it is expected that some care is required or being provided for within the study area.
Dependencies	Independent	Very Low	The age dependency ratio for the study area is 34.24% in Saggart ED and 30.68% in Tallaght-Jobstown ED, which is lower than the national average of 53.2%.
Health Status	Very good	Very Low	The local area has a majority of "very good" or "good" health (69.3%) within Saggart ED, and 81.6% within Tallaght-Jobstown ED.
Adaptability	High capacity	Very Low	It is expected that the Proposed Development will not have an adverse effect on service quality for the resident population.

Criteria	Classification	Risk Category	Justification
Overall Sensitivity		**Very Low**	

4.4 Characteristics of the Proposed Development

The characteristics of the Proposed Development are detailed below. For further information refer to the Project Description Chapter 2 of the EIAR.

The proposed development is an LRD consisting of 611 no. dwellings, comprised of 306 no. 2, 3, 4 & 4-5 bed, 2 & 3 storey, detached, semi-detached & terraced houses, 133 no. 1, 2 & 3 bed duplex units in 12 no. 2-3 storey blocks, and 172 no. 1, 2 & 3 bed apartments in 5 no. buildings ranging in height from 4-5 & 5 storeys. The proposed development also includes a 2-storey crèche (c.630m²).

Access to the development will by via one no. new vehicular access point from the Boherboy Road, along with new vehicular connections to adjoining developments at Corbally Heath to the east and Carrigmore Green to the north. Ten no. houses in the south-east part of the site will be accessed from Corbally Glade to the east. The proposed development includes for pedestrian and cyclist connections throughout the proposed development and accesses into adjoining lands at Carrigmore Park, Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north.

Private amenity space for the residential units is provided in the form of rear gardens for houses and ground floor terraces / upper floor balconies for apartments and duplex units. The proposed development provides for a total of c. 2.3Ha of public open space, and c. 4,750sq.m of communal open space associated with proposed development.

The proposed development provides for (i) all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, (ii) public open spaces (c. 2.3Ha), (iii) communal open spaces (c. 4,750sq.m), (iv) hard & soft landscaping and boundary treatments, (v) surface car parking (861 no. car parking spaces), (vi) bicycle parking (711 no. bicycle parking spaces), (vii) bin & bicycle storage, (viii) diversion of all existing overhead ESB lines underground, (ix) public lighting, and (x), plant / PV panels (M&E), utility services & 8 no. ESB sub-stations, all on an overall application site area of c.18.7Hha. In accordance with the South Dublin County Development Plan (2022-2028), an area of c.1.03Ha within the site is reserved as a future school site.

4.5 Potential Effect of the Proposed Development

4.5.1 Construction Phase

Population demographics

The construction phase will create short term construction related employment. Due to the fact that employees may either be already resident in the local area or may travel to and from the

site from surrounding towns, the effect on population demographics has been assessed at a county level.

Based on the mobile nature of construction and the baseline population assessment, the likely effect on population demographics as result of the Proposed Development will be direct, short term and imperceptible.

Socio-economic

The construction phase will create short term construction related employment. Employment creation will have a direct effect on the local economy but also an indirect effect through daily spending by employees in local businesses.

Due to the fact that employees may either be already resident in the local area or may travel to and from the Site from surrounding towns, the socio-economic effect has been assessed at both a local scale and a county level.

Based on the mobile nature of construction and the baseline assessment of economic activity, the likely effect on the economy on a local scale will be both direct and indirect, short term positive and imperceptible. At a county scale, the likely effect on the economy will be both direct and direct, short term, positive and imperceptible.

Water Quality

During the construction phase there is potential for excavation and construction works to effect ground water and surface water quality. Surface water runoff with cementitious materials used during the construction of foundations, pavements and other structures, suspended solids or other potentially deleterious materials could enter the enter the underlying groundwater at the site.

Surface water runoff will be managed during the construction phase to ensure there will be no direct discharge to groundwater or surface water. The mitigation measures outlined in Chapter 7 Hydrology and Hydrogeology of this EIAR combined with the mitigation measures within the Construction Environmental Management Plan (CEMP) will ensure that there will be no significant effect on the receiving groundwater and surface water environment.

The effect of the Proposed Development on water quality and human health will be neutral, imperceptible and short term.

Air Quality

The greatest potential effect on air quality during this phase is from construction dust emissions and the potential for nuisance dust. Construction vehicles and machinery during the construction phase will also temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Fine particles from these sources are recognised as a potential significant cause of pollution and can be damaging to the health of the surrounding population during the construction phase.

According to the Health Service Executive (HSE), the health effects associated with the main pollutants of concern are:

- Nitrogen Dioxide, Sulphur Dioxide, Ozone - Irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases.
- Particles (PM10, PM2.5) - Can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.
- Carbon Monoxide - Prevents the uptake of oxygen by the blood and poses a greater risk to those suffering from heart disease.

There are several sensitive receptors located within 50m of the site boundary including existing and proposed residential developments. Chapter 8 Air Quality notes that overall, residual fugitive emissions of dust from the Site will be insignificant and pose no nuisance at nearby receptors during the construction phase.

Appropriate mitigation and monitoring measures have been recommended in Chapter 8 Air Quality and the CEMP will be implemented at the site in order to minimise the risk of dust emissions arising during construction and demolition.

Construction traffic is not expected to result in a significant change in AADT flows near to sensitive receptors and according to IAQM guidance are unlikely to have a significant effect on local air quality.

Based on the above, the likely effect of air quality on population and human health will be negative, short term and slight.

Noise and Vibrations

Noise exposure can cause a variety of human health effects including annoyance, sleep disturbance, raised stress levels, work impacts for commercial receptors or individuals who work from home. Noise generating activities associated with the construction phase have been identified in Chapter 10 Noise and Vibrations of this EIAR and include vehicular traffic as well as noise from the operation of fixed or mobile machinery onsite. During the Construction Phase all operations will comply with the BS5228:2009 “Noise and Vibration Control on Construction and Open Sites”.

Typical working hours for the site will be subject to the condition of the planning permission but are expected to be Monday to Friday from 8am to 5pm. Special construction operations may need to be carried out outside these hours to minimise disruption to the surrounding area, which will be subject to agreement with the Local Authority. No activities will be permitted onsite outside of these hours unless by prior agreement with the Local Authority. These set working hours will minimise the short-term noise impacts on the surrounding population.

Traffic and Transport

There is potential for construction traffic to effect the surrounding population and human health by causing congestion on the local road network. A series of traffic control measures will be implemented during the construction phase to ensure any potential impacts on the adjacent local and strategic road network are minimised. Construction vehicles and HGVs will be restricted to using only the approved means of access and movement of construction vehicles will be restricted designated routes. The likely traffic effect of the construction works will be negative, short-term and slight.

Landscape and Visual Effect

During the construction phase the site landscape will undergo a change which will have a visual impact. This will potentially impact on the visual amenity of the nearby visual receptors. These landscape effects will reduce rapidly with distance from the site boundaries, and intervening hedgerows, open park spaces, and existing buildings will further reduce the impacts to minor to negligible, negative and short term for the construction phase.

It is concluded that the Proposed Development will, therefore, have a minor, negative and short to medium-term impact on the landscape character of the site during the construction phase.

4.5.2 Operational Phase

Population demographics

The Proposed Development will provide a large number of residential units and will cater for a wide range of people including families, older persons and young couples. In relation to the existing population and the baseline demographic assessment completed in Section 4.3, the Proposed Development will have a neutral, long term and slight effect on population demographics.

The site will result in a sizeable addition to the study area. This is considered to have a positive, long-term effect on population and human health particularly in the context of current housing demand.

Socio-economic

The Proposed Development will provide a large number of residential units and will result in an increase in the population of the surrounding area.

Water Quality

There will be no significant sources of contamination during the operational phase. Chapter 7 Hydrology and Hydrogeology of this EIAR has concluded that there would be an ‘imperceptible’ effect to the quality of receiving hydrological receptors over a range of durations from short-term to long-term.

Based on the implementation of the mitigation measures outlined in Chapter 7, the likely effect on water quality and subsequently human health will be direct, long term, and imperceptible.

Air Quality

The greatest potential effect on air quality during the operational phase is from traffic-related air emissions. In relation to air quality during operational phase of the Proposed Development, compliance will be maintained with all relevant ambient air quality standards and guideline values and thus the impact of the development is not significant in the long term.

Based on the above assessment the likely effect of the Proposed Development on air quality and subsequently human health will be not significant.

Noise and Vibrations

Noise associated with traffic movements and operational phase activities can negatively impact the population and human health of the surrounding residents. Noise sensitive receptors have been identified as primarily residential properties and have been listed in

Chapter 10 of this EIAR. The main noise sources for the operation of the new developments are anticipated to be vehicles using the car park, heavy goods vehicles (HGV) movements, plant and equipment noise and operational noise from the loading and unloading of HGVs.

Noise is fully assessed in Chapter 10 of this EIAR. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (estate vehicle movements and children playing) and hence no significant effects are expected from this area of the site.

The impact assessment of noise and vibration has concluded that during the operational phase the predicted residual effect during the construction phase ranges from imperceptible – slight and are neutral and short term. During the operational phase post mitigation the residual effect is considered to be neutral, imperceptible-slight and long-term.

Based on the above assessment the likely effect of the Proposed Development on noise and vibration and subsequently human health will be long term, neutral and imperceptible.

Traffic and Transport

Chapter 14 Traffic and Transportation concludes that during the construction phase the residual effect of the proposed development will be negative, imperceptible, likely, direct, reversible, short term and temporary.

Additionally, during the operational phase, it was concluded that the residual effect would be negative, imperceptible, likely, direct, reversible, long term and permanent.

It is therefore considered that the likely effect of the Proposed Development on the surrounding road network and subsequently human health will be imperceptible during the construction and operational phase.

Landscape and Visual Impact

The potential landscape and visual effects of the Proposed Development are fully assessed in Chapter 11 of this EIAR. The Proposed Development has the potential to cause visual impact during the operational phase. The site is currently predominately greenfield. The surrounding area is predominantly residential and greenfield.

Chapter 11 concluded that upon completion of construction, the initial disturbance and visual change will gradually be softened as the new development becomes established within its setting. Over time, the proposed landscaping and architectural integration will help assimilate the development into the surrounding environment. As a result, the residual impacts on the local landscape and visual character are anticipated to be minor to negligible, with effects becoming negligible and neutral at greater distances, and long-term in duration

It is therefore considered that the likely effect of the Proposed Development on Landscape and visual and subsequently human health is considered to be not significant.

4.5.3 Potential Cumulative Effects

The list of cumulative schemes has been detailed in Chapter 2 of this EIAR.

With the implementation of best practice guidelines, mitigation measures within the EIAR and the CEMP, it is not expected that there will be significant cumulative effects.

4.5.4 "Do Nothing" Effect

If the Proposed Development did not proceed, the site would remain as a greenfield site and there would be no immediate effect on the existing population or economic activity in the area. This would be an under-utilisation of zoned and serviceable lands from a planning and development perspective.

4.6 Avoidance, Remedial & Mitigation Measures

4.6.1 Construction Phase

No specific mitigation measures are required during the construction phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

4.6.2 Operational Phase

No specific mitigation measures are required during the operational phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

4.6.3 "Worst Case" Scenario

A worst-case scenario could occur in the event that mitigation measures fail to minimise and / or prevent potential adverse effects. Although there are no specific mitigation measures relating to population and human health, the following possibilities may occur where mitigation measures fail in relation to air quality, noise and traffic.

- An increase in the production of dust that can be carried throughout the site and create adverse effects on the neighbouring environment.
- An increase in noise caused during the operational phase can cause a disturbance any residential dwellings in close proximity to the site.
- An increase of traffic within the surrounding roads and junctions of the site.

However, it is imperative that such mitigation measures are implemented to ensure that the worst-case scenario does not occur. When considering the mitigation measures that will be in place, the event of a worst-case scenario is deemed to be unlikely.

4.7 Residual Effect

Residual Impacts are defined as "*effects that are predicted to remain after all assessments and mitigation measures".* Refer to Table 4-11 for the predicted residual effects.

Table 4-11 Residual Effects

Activity	Receptor	Predicted Impact	Quality	Significance	Duration	Type	Mitigation Measures	Residual Effect
Construction Phase								
Construction phase noise	Noise Sensitive Locations	Noise impacts	Neutral	Slight	Short term	Direct	Mitigation measures proposed in Chapter 10.	Slight
Construction phase related traffic	Sensitive Receptors	Air quality impacts Nuisance	Negative	Slight	Short term	Direct	Mitigation measures proposed in Chapter 8 and CEMP.	Slight
Construction Phase Employment	Study Area	Local Employment	Positive	Slight	Short term	Direct	N/A	Slight
Operational Phase								
Operational phase noise	Noise Sensitive Locations	Noise impacts	Neutral	Imperceptible	Long term	Direct	Mitigation measures proposed in Chapter 10.	Imperceptible
Operational phase related traffic	Receptors within 250m	Air quality impacts	Negative	Negligible	Medium to long term	Direct	Mitigation measures proposed in Chapter 8.	Imperceptible
Operational phase related traffic	Noise Sensitive Receptors (listed in Chapter 9)	Noise impacts	Negative	Low	Medium to long term	Direct	Mitigation measures proposed in Chapter 14.	Slight

4.8 Monitoring

4.8.1 Construction Phase

No specific monitoring measures are required during the construction phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

4.8.2 Operational Phase

No specific monitoring measures are required during the operational phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

4.9 Interactions

Hydrology and Hydrogeology

Interactions between water and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of impacts on local drinking water. However, the mitigation measures outlined in Chapter 7 outlines that Proposed Development will not result in significant effects on water which therefore will not have a significant effect on the local population.

Air Quality

Interactions between air quality and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of impacts on air quality. However, the mitigation measures outlined in Chapter 8 Air Quality outlines that Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected.

Noise

Interactions between noise and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of noise and vibrations. However, the mitigation measures outlined in Chapter 10 Noise outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.

Landscape and Visual

Interactions between landscape and visual, and human health have been considered. The Proposed Development has the potential to cause nuisance to the local population. However, the mitigation measures outlined in Chapter 11 Landscape and Visual outlines that Proposed

Development will not result in significant effects which therefore will not have a significant effect on the local population.

Traffic and Transport

Interactions between transport and human health have been considered. The Proposed Development has the potential to cause a nuisance to the local population. However, the mitigation measures outlined in Chapter 14 Traffic and Transport outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.

4.10 Difficulties Encountered When Compiling

The conclusions made in this chapter are based on available information. Consideration has been given to the halting site located in close proximity to the sites, and there is the possibility that the 2022 Census does not fully capture the statistics of the people located at the halting site.

4.11 Conclusion

Overall, taking into consideration the baseline population and the sensitivity of the receiving environment, coupled with the predicted residual effects after mitigation measures are implemented, it is considered that the Proposed Development will not have a significant residual effect on the population and human health in the area.

4.12 References

The Central Statistics Office (CSO) 2022

Ordinance Survey Ireland (OSI)

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

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

Healthy Ireland Framework 2013-2025

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

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

Guidelines on the information to be contained in Environmental Impact Assessment Reports, EPA (2022).

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

5.1 Introduction

5.1.1 Background

This Chapter was prepared by Scott Cawley Ltd.

This Chapter provides an assessment of the potential ecological effects of the proposed development at Boherboy, Saggart, Co. Dublin (Grid Ref: O 04802 26438) to the southwest of Dublin city. The proposed development consists of construction of a Large-scale Residential Development (LRD).

The development will consist of 611 no. dwellings, comprised of 306 no. 2, 3 & 4 bed, 2 & 3 storey, detached, semi-detached & terraced houses, 133 no. 1, 2 & 3 bed duplex units in 12 no. 2-3 storey blocks, and 172 no. 1, 2 & 3 bed apartments in 5 no. buildings ranging in height from 4-5 & 5 storeys. The proposed development also includes a 2-storey crèche (c.630m²). A detailed description of the proposed development is included in Chapter 2 of the EIA report.

Access to the development will by via one no. new vehicular access point from the Boherboy Road, along with vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

The proposed development provides for (i) all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, (ii) public open spaces (c. 2.19Ha), (iii) communal open spaces (c. 4,337m²), (iv) hard and soft landscaping and boundary treatments, (v) surface car parking, (vi) bicycle parking, (vii) bin & bicycle storage, (viii) public lighting, and (ix), plant (M&E), utility services & ESB sub-stations, all on an overall application site area of 18.7Ha. In accordance with the South Dublin County Development Plan (2022-2028), an area of c. 1.03Ha within the site is reserved as a future school site.

Scott Cawley Ltd. have previously prepared an Appropriate Assessment Screening report[1] and a Biodiversity Chapter as part of an EIAR[2] for a proposed SHD on the Boherboy Lands (SHD3ABP-313145-22). The original survey area for which field surveys and desktop study were undertaken to inform the biodiversity reports for the SHD planning application did not include the area within the hatched yellow area as illustrated in Figure 5-1 in the southeast of the Boherboy Lands. However, this area is now included in the new Appropriate Assessment and EIAR Biodiversity Chapter for the proposed LRD that encompasses all of the Boherboy Lands.

The lands comprise of two agricultural grassland fields which are separated by a hedgerow and stream. The Corbally stream runs along much of the eastern and southern boundary of the site. The Coldwater stream flows along the western boundary, and the Cooldown stream is noted along the central field boundary on the site. The site also comprises a small area of dis-used grassland, located to the east of the Corbally Stream. Hedgerows and treelines surround the lands. Cattle graze on the

[1] Scott Cawley Ltd. (2021). Saggart Strategic Housing Development. Appropriate Assessment Report.
[2] Scott Cawley Ltd. (2021). Proposed Strategic Housing Development. Boherboy Road, Saggart, Dublin 24, Co. Dublin

agricultural fields, with open cow sheds in the south of the site, adjacent to the entrance from the Boherboy Road. The land is bound by the Boherboy Road (L2008) to the south, agricultural fields to the west, and residential areas to the east.

Figure 5-1: The Proposed Development in relation to the wider surroundings

5.1.2 Aims

The purpose of this chapter is to:

- Establish and evaluate the baseline ecological environment, as relevant to the proposed development
- Identify, describe and assess all potentially significant ecological effects associated with the proposed development
- Set out the mitigation measures required to address any potentially significant ecological effects and ensure compliance with relevant nature conservation legislation
- Provide an assessment of the significance of any residual ecological effects
- Identify any appropriate compensation, enhancement or post-construction monitoring requirements

Scott Cawley have previously prepared an Appropriate Assessment Screening report[3] and a Biodiversity Chapter as part of an EIAR[4] for a previously proposed SHD on the Boherboy Lands, for which permission has been refused (ABP case reference TA06S.313145). A separate stand-alone Appropriate Assessment (AA) Screening Report (Scott Cawley Ltd., 2025) has been prepared and will be submitted as part of the planning application documentation to the planning authority (in this instance South Dublin County Council). The AA Screening Report contains information to inform the competent authority's assessment of potential impacts on European sites as a result of the proposed development either alone or in combination with other plans/projects.

5.1.3 Quality Assurance and Competency of Experts

This Biodiversity chapter for the EIAR was authored by Cathal O'Brien, Jamie Dempsey and Bea Jackon and reviewed by Colm Clarke of Scott Cawley Ltd.

Cathal O'Brien

Cathal O'Brien is a Senior Consultant Ecologist at Scott Cawley Ltd. with over five years' professional ecological consultancy experience in preparing Environmental Impact Assessment Reports (EIARs). Cathal is an Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and holds a BSc (Hons) in Environmental Biology from University College Dublin and a MSc (Hons) in Ecology from the University of Bremen. He also has over five years' experience across a range of field surveys such as breeding birds, tree inspections for bat roosts, invasive species and other mammal survey including for badger activity as well as habitat surveys. He also has four years' consultancy experience report writing including, preparing Ecological Impact Assessments (EcIAs), Preliminary Ecological Appraisal reports (PEAs), Appropriate Assessment screening reports (AAs) and Planning Compliance and/or Technical Note reports.

Jamie Dempsey

Jamie is a Senior Consultant Ecologist, employed by Scott Cawley Ltd. since April 2023. He obtained a master's degree in Applied Environmental Science from University College Dublin. Since joining Scott Cawley Ltd., he has carried out habitat and protected species (including bat, bird, otter, badger, amphibian, reptile) surveys for a range of projects, including multiple national infrastructure developments, and has authored ecological reports, including AA Screening Reports, NIS, and EIAR Biodiversity Chapters.

Bea Jackson

Bea Jackson is a Senior Consultant Ecologist at Scott Cawley Ltd. and is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She holds a BA in Botany from Trinity College Dublin and a MSc in Botany from the same institution. Bea has experience in the surveying of habitats, and for a range of protected species (including bird, bat, otter, badger, amphibian, reptile). Bea has authored and contributed to ecological reports including AA Screening Reports, Natura Impact Statements and Environmental Impact Assessment Reports.

3 Scott Cawley Ltd. (2021). Saggart Strategic Housing Development. Appropriate Assessment Report.
4 Scott Cawley Ltd. (2021). Proposed Strategic Housing Development. Boherboy Road, Saggart, Dublin 24, Co. Dublin

Colm Clarke

Colm Clarke is Associate Director of Terrestrial Ecology with Scott Cawley and has ten year's professional experience in ecological consultancy. He obtained an honours degree in Natural Sciences from Trinity College Dublin, and a Masters in Biodiversity and Conservation from the same institution. Colm is a full member of the CIEEM, a member of Bat Conservation Ireland and Chairperson of the Dublin Bat Group. Colm is Scott Cawley's lead bat ecologist, and regularly prepares derogation licences for bats and their roosts, and oversees the discharge of licence obligations. As part of this work, Colm provides advice on protected species to clients and contractors. Colm is on the CIEEM's EcIA Accreditation Working group, which aims to improve the quality of Ecological Impact Assessment (EcIA) Reports through an accreditation process, and he is an assessor on the EcIA Pilot Accreditation Scheme. Colm is experienced in scoping, preparing, and reviewing EcIA (including EIA Biodiversity Chapters) and in the completion of Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS), and has prepared these reports and acted as internal reviewer (as part of Scott Cawley's quality assurance process) on a range of projects from renewable (Solar and wind energy), residential to industrial and large scale infrastructure (e.g. national road and rail projects). Colm also regularly completes technical peer review and has assessed projects for local authority clients and renewable energy developers. As a member of the Irish Environmental Law Association and regular attendee at IELA seminars, Colm stays abreast of developments in environmental law and how these relate to changes to assessment practices.

5.2 Study Methodology

5.2.1 Scope of the assessment

The study area is defined by the Zone of Influence (ZoI) of the proposed development with respect to the ecological receptors that could potentially be affected.

The ZoI, or distance over which potentially significant effects may occur, will differ across the Key Ecological Receptors (KERs), depending on the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken has established the habitats and species present within, and in the vicinity of, the proposed development site. The ZoI and study area was then informed and defined by the sensitivities of each of the KERs present, in conjunction with the nature and potential impacts associated with the proposed development.

The ZoI of habitat loss impacts is confined to within the proposed development boundary.

The ZoI of potential impacts on surface water quality in the receiving environment extends downstream to freshwater, estuarine and coastal ecosystems associated with waterbodies that are hydrologically connected to the proposed development via the Coldwater, Cooldown, and Corbally streams which run south to north along the western boundary, central hedgerow, and eastern boundary respectively. The Corbally Stream also runs along the northern boundary of the site.

The ZoI of air quality effects related to dust deposition is likely to be located within and/or adjacent to the proposed development site boundary.

The ZoI of general construction activities (i.e. risk of spreading/introducing non-native invasive species, dust deposition and disturbance due to increased noise, vibration, human presence and lighting) is not likely to extend more than several hundred metres from the proposed development.

5.2.2 Desk Study

A desk study was undertaken on the 25th September 2025, to collect any available information on the local ecological environment. Consultation was also sought with the relevant statutory bodies (i.e. National Parks & Wildlife Service (NPWS) and Inland Fisheries Ireland (IFI)). The following resources assisted in the production of this report, in addition to those listed in the references section of this report:

- Data on European sites, Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS) from https://www.npws.ie/protected-sites and https://www.npws.ie/maps-and-data – refer to Appendix 5.1 for descriptions and locations of protected sites in the vicinity of the proposed development

- Records of rare and protected species, as held by the National Biodiversity Data Centre www.biodiversityireland.ie or the NPWS – refer to Appendix 5.2 for all desk study flora and fauna records

- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning, Community and Local Government web map portal. Available from https://myplan.ie/

- Ordnance Survey Ireland mapping and aerial photography from https://osi.maps.arcgis.com;

- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service. Available from https://gis.epa.ie/EPAMaps/

- Information on soils, geology and hydrogeology in the area available from the Geological Survey Ireland (GSI) online Spatial Resources service. Available from https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx;

- Information on local biodiversity policies and objectives within the South Dublin County Development Plan 2022-2028[5], and the Draft South Dublin County Biodiversity Plan 2020-2026[6];

- Scott Cawley Ltd. (2020). Chapter 5 Biodiversity, Strategic Housing Development, Boherboy, Saggart, Co., Dublin;

[5] South Dublin County Council (2022) County Development Plan 2022-2028

[6] South Dublin County Council (2020) Draft Biodiversity Action Plan for South County Dublin 2020-2026. Plan as published for public display. Accessible from https://www.sdcc.ie/en/services/planning/heritage-and-conservation/connecting-with-nature-a-biodiversity-plan-for-south-dublin-county.pdf

- Information on the location, nature and design of the proposed development supplied by the applicant's design team; and,
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland (Gilbert et al., 2021).
- Large-Scale Residential Development on lands at Boherboy, Saggart, Co. Dublin, Hydrological & Hydrogeological Risk Assessment Report (DNV, 2025).
- A summary of the consultation with IFI is provided below. No response was received from the NPWS Development Applications Unit. White clawed crayfish and brown trout are known to be present in the downstream environment in the River Camac;
- The EIAR must address the protection of the Corbally stream, with minimum interference to the riparian zone and maintenance of the watercourse in as natural a condition as possible. The riparian buffer zone that is to be implemented must be maintained for operation and construction;
- The EIAR must provide mitigation measures to protect the Coldwater and Cooldown streams. While these watercourses are seasonally dry, they provide a potential pathway to the downstream environment, and that this must be protected;
- The EIAR must include appropriate mitigation measures over soil management during construction particularly in regards to site reprofiling. Mitigation measures need to be monitored over the construction phase in order to be effective;
- The EIAR must include a commitment to monitoring of petrol interceptors to be used in the SuDS design to ensure continued efficacy during the operational phase;
- IFI recommend the use of clear span structures for stream crossings within the proposed development. If the clear span structure is not possible due to the design constraints, and if the use of a culvert is unavoidable, it is to be designed and installed in a manner that does not inhibit the passage of fish or alter the natural flow regime within the watercourse, as per the IFI guidance. This also requires a seasonal constraint for the period when this can be constructed.

5.2.3 Planning, Policy and Legislation

The collation of ecological baseline data and the preparation of this assessment has had regard to the following legislation and policy documents. This is not an exhaustive list but the most relevant legislative and policy basis for the purposes of preparing this EIAR Biodiversity chapter.

The following international legislation is relevant to the proposed development:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network[7] was established and special areas of conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.

- Directive 2009/147/EEC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas are designated for the protection of endangered species of wild birds listed in Annex I of that directive.

- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy hereafter, referred to as the 'Water Framework Directive'. The Water Framework Directive' is the legislation requiring the protection and improvement of water quality in all waters (rivers, lakes, groundwater, and transitional coastal waters) with the aim of achieving good ecological status by 2015 or, at the latest, by 2027.

The following national legislation is relevant to the proposed development:

- Wildlife Acts 1976 to 2021; hereafter collectively referred to as the 'Wildlife Acts'. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.

- Planning and Development Acts 2000 to 2021; hereafter collectively referred to as the 'Planning and Development Acts'. This piece of legislation is the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites. It also sets out the requirements in relation to environmental assessment with

[7] The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.
In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

respect to planning matters, including transposition of the Habitats and Birds Directive into Irish law.

- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2015; hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the regulations).

- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003). This legislation transposes the Water Framework Directive into Irish Law.

- Flora (Protection) Order, 2022. This lists species of plant protected under Section 21 of the Wildlife Acts.

The following plans and policies are relevant to the proposed development:

- South Dublin County Development Plan 2022-2028 (South Dublin County Council, 2022)

- All-Ireland Pollinator Plan 2021-2025 (National Biodiversity Data Centre, 2021)

- Draft Biodiversity Action Plan for South Dublin County 2020-2026 (South Dublin County Council, 2020). This lists South Dublin County's objectives and actions in relation to biodiversity within the county boundary and how they align with those listed in the 4th National Biodiversity Action Plan 2023-2030 (NPWS, 2023).

- South Dublin County Council Tree Management Policy (South Dublin County Council, 2021).

- 4th National Biodiversity Action Plan 2023-2030 (Department of Housing, Local Government and Heritage, 2023).

5.2.4 Field Survey Methodology

This section describes the ecological surveys carried out to inform the ecological assessment presented in this chapter.

5.2.4.1 Habitats and Flora Survey

General Habitat Surveys

Initial habitat surveys for a previous planning application for the site were carried out on the 29th June 2020, with follow-up habitat surveys completed on the 1st March 2021. An updated habitat survey was undertaken of the proposed development site on the 4th April 2023, with a subsequent habitat survey was undertaken on the 7th April 2025 , following the methodology described in *Best Practice Guidance for Habitat Survey and*

Mapping[8]. All habitat surveys were completed by Scott Cawley Ltd. A hedgerow appraisal of the Boherboy townland boundary hedgerow, and the site's western, southern and central hedgerows was undertaken as part of the habitat survey on the 7th April 2025 following the methodology described in *Hedgerow Appraisal System - Best Practice Guidance on Hedgerow Survey, Data Collation and Appraisal*[9] in order to better support the ecological assessment with respect to these linear features in line with the South Dublin County Council's Development Plan regarding green infrastructure and natural heritage.

All habitat types were classified using the *Guide to Habitats in Ireland*[10], recording the indicator species and abundance using the DAFOR scale[11] and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database*[12], having regard to more recent taxonomic changes to species names after the *New Flora of the British Isles*[13] and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide*[14].

Detailed Botanical Surveys

Detailed botanical surveys were completed following the original preplanning meeting with SDCC and comprised the collection of relevé data for habitats that exhibited affinities to marsh habitat. The selection of locations for the collection of relevé data was based on the following procedure:

- Description of marsh habitat by SDCC's biodiversity officer;
- Identification of wet grassland and possible marsh habitats in field by the botanical surveyor;
- Completion of a desk-based review of the full botanical dataset gathered during the general habitat surveys by an experienced botanist to identify those habitats with potential to overlap with marsh habitat, and a review of historical aerial orthophotography to identify areas of wet ground within the site.

A subset of habitat polygons was identified on foot of the above process, and this subset of polygons was surveyed for the collection of relevé data. Relevé data was collected in December 2024. These sites were subsequently revisited in July 2025, within the optimal season for habitat surveys (Smith et al., 2011). Relevé size was determined by habitat, type with 2m x 2m relevés collected for grassland and marsh

8 Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011) Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council Church Lane, Kilkenny, Ireland.
9 Foulkes, N., Fuller, J., Little, D., McCourt, S. and Murphy, P. (2013). Hedgerow Appraisal System - Best Practice Guidance on Hedgerow Survey, Data Collation and Appraisal. Woodlands of Ireland, Dublin.
10 Fossitt, J.A. (2000) A Guide to Habitats in Ireland. Heritage Council, Kilkenny.
11 The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.
12 Weekes, L.C. & FitzPatrick, Ú. (2010) The National Vegetation Database: Guidelines and Standards for the Collection and Storage of Vegetation Data in Ireland. Version 1.0. Irish Wildlife Manuals, No. 49. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
13 Stace, C. (2019) New Flora of the British Isles. 4th Edition. C&M Floristics.
14 Atherton, I., Bosanquet, S. & Lawley, M. (2010) Mosses and Liverworts of Britain and Ireland: A Field Guide. Latimer Trend & Co., Plymouth.

habitats. The outputs of relevé datasets were evaluated against the definitions of Annex I habitats in their Irish context as per the following publications:

- The definition of *Molinia* meadows [6410] habitat in the Irish context as per *The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats* (Martin *et al.*, 2018)[15]

- The definition of hydrophilous tall herb swamp [6430] habitat in the Irish context as per *The Irish semi-natural grasslands survey 2007-2012* (O'Neill *et al.*, 2013)[16].

5.2.4.2 Fauna Surveys

Terrestrial Mammals (Excluding Bats)

Initial mammal surveys were conducted on 29th June 2020,and again on the 1st March 2021 to support a previous planning application for a Strategic Housing Development (SHD) submitted to the South Dublin County Council (ACP Ref: TA06S.313145; SDCC Ref: SHD3ABP-304828-19) in the agricultural lands, located to the west of the Corbally Stream. Subsequent terrestrial fauna surveys (excluding bats) were undertaken on the 4th April 2023 of the entire lands within the proposed development boundary. An updated survey was undertaken on the 7th April 2025. A camera trap was deployed on the 2nd July 2025 and 29th September 2025 (for 7 days and 9 days respectively) to capture any mammal activity and evidence of use adjacent to mammal holes previously recorded on site. The presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. Surveys to check for the presence of badger setts and/or otter holts within the study area, and to record any evidence of use, were undertaken.

Otter signs

Initial surveys for signs of the presence of otter (*Lutra lutra*) were undertaken on 29th June 2020 and 1st March 2021. Follow-up surveys were carried out on 4th April 2023, and 7th April 2025. All surveys were conducted by Scott Cawley Ltd. The lands were assessed for field signs of otter, including evidence of spraints within or adjacent to watercourses couches, holts or slides along banks.

Breeding birds

Two full seasons of breeding bird surveys were undertaken by Scott Cawley Ltd. ecologists in 2023 and 2024 (see Table 5-1). Breeding bird surveys were also carried out on the 15th and 26th June 2020 by Brian Porter, an independent ornithologist, and

[15] Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018). The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats. Irish Wildlife Manuals, No. 102. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Dublin.

[16] O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013). The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.

on the 27th May and 18th June 2021 by Scott Cawley Ltd. to inform a previous planning application for a SHD in the agricultural lands, west of the Corbally Stream. The survey methodology was adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species* [17]. The study area covered the lands within the red line boundary and a buffer of 50m from it. Lands within the study area were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. Bird species nomenclature follows Collins Bird Guide[18]. The survey details are provided in Table 5-1 below.

Table 5-1: Details of breeding bird surveys undertaken within the Proposed Development site

Date (Sunrise)	Survey Time	Weather Conditions
16/06/2020 (04:58)	05:28 - 08:18	Mostly clear in near calm dry conditions with temperatures of 11-16°C.
26/06/2020 (05:00)	05:40 - 08:21	Scattered clouds, dry in a light breeze with temperatures around 8°C.
27/05/2021 (05:10)	05:40 – 08:30	Dry, mild with no clouds, temperatures of 12-16°C.
18/06/2021 (04:57)	05:30 – 08:10	Dry, partly cloudy, temperatures of 9-14°C. Slight breeze.
05/04/2023 (06:32)	07:18 - 10:20	Scattered clouds, dry with temperatures around 8°C. Gentle south-westerly breezes.
18/05/2023 (05:23)	06:55 - 09:15	Mostly cloudy and mild with temperatures of around 10°C. Dry with a light south-south-westerly breeze.
09/06/2023 (05:00)	05:32 - 09:30	Scattered clouds with temperatures around 10°C. Dry in light easterly breezes.
17/04/2024 (06:20)	06:20 - 09:35	Scattered clouds, dry with temperatures of around 4°C. Light westerly breezes.
16/05/2024 (05:25)	05:35 – 09:38	Overcast, very misty with temperatures around 9°C. Light north-north-westerly breezes.
14/06/2024 (04:58)	05:00 - 08:00	Overcast, dry with temperatures of around 11°C. Moderate south-westerly breezes.

Wintering Birds

Wintering bird surveys were undertaken from November 2023 to March 2024 as part of the updated baseline surveys. Wintering bird surveys were undertaken on the 10th

17 Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird Monitoring Methods - A Manual of Techniques for Key UK Species*. RSPB: Sandy

18 Svensson, L., Mullarney, K., Zetterstrom, D. (1999) *Collins Bird Guide. The Most Complete Field Guide to the Birds of Britain and Europe*. Harper Collins, London.

November 2023, 14th December 2023, 16th January 2024, 14th February 2024 and 15th March 2024 by Scott Cawley Ltd. Additional surveys were undertaken in September and October 2025 by Scott Cawley Ltd. Surveys were also completed for a previous planning application submitted to the South Dublin County Council (ACP Ref: TA06S.313145; SHD3ABP-313145-22) on 25th February 2020, 19th and 23rd March 2020, 17th February and 18th March 2021 by Scott Cawley Ltd. As land use within the proposed development site remains unchanged for the current planning application, the data from these surveys has been incorporated to inform this biodiversity chapter.

The study area covered the lands within the red line boundary including lands within the proposed development areas of agricultural grassland, patches of wet grassland and an area of recolonising bare ground which abounds the Boherboy Road (L2008), residential areas to the east, and agricultural fields to the west. Lands were surveyed visually using binoculars/scope from two vantage points within the study area. Vantage Point 1 comprised the eastern field, and Vantage Point 2 was located in the western field (see Figure 5-2). Vantage point surveys were followed by a walkover of each field to identify evidence of usage by wildfowl such as waders, swans or geese (e.g. droppings). Birds were identified by sight and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. Bird species nomenclature follows Collins Bird Guide (Svensson, 1999)[18]. The survey details are provided in Table 5-2 below.

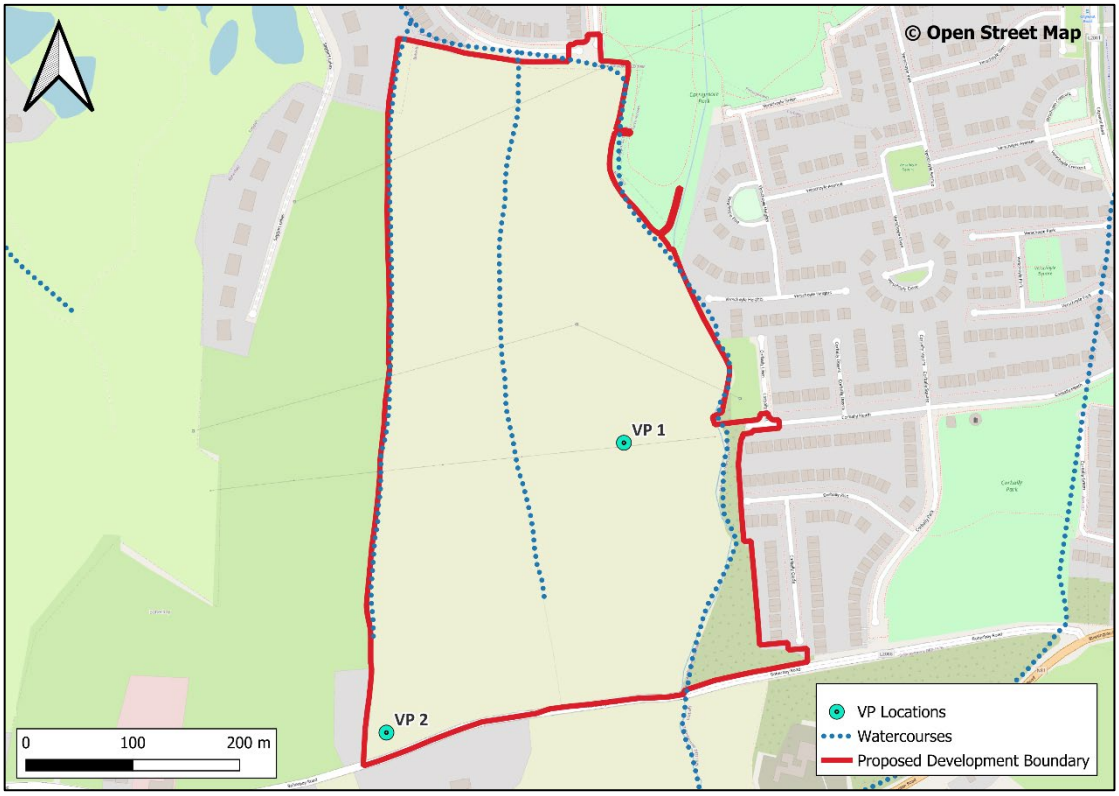


Figure 5-2: Vantage Point (VP) Locations within the Proposed Development

Table 5-2 Details of wintering bird surveys undertaken within the Proposed Development

Date	Survey Time	VP No.	Weather Conditions
25/02/2020	09:20 - 12:20	1	Scattered clouds with temperatures of around 4°C. Strong westerly wind. Dry
25/02/2020	13:42 - 16:42	2	Overcast with temperatures of around 4°C. Strong westerly breeze. Rain/snow showers.
19/02/2020	09:45 – 12:45	2	Mostly clear with temperatures of around 7°C. Light south-westerly breeze. Dry.
23/03/2020	13:50 - 16:30	1	Scattered clouds with temperatures of around 14°C. Moderate southerly wind. Dry.
17/02/2021	09:00 - 12:00	1	Partly cloudy with temperatures of around 8°C. Moderate southerly wind. Showers.
17/02/2021	13:00 - 16:00	2	Partly cloudy with temperatures of around 8°C. Moderate southerly wind. Showers.
18/03/2021	08:45 – 11:45	2	Overcast with temperatures of around 10°C. Light westerly breeze. Dry.
18/03/2021	12:30 – 15:30	1	Overcast with temperatures of around 10°C. Light westerly breeze. Dry.
10/11/2023	09:00 - 12:00	1	Mostly clear with temperatures of around 3°C. Gentle west-south-westerly breeze. Dry.
10/11/2023	12:50 - 15:40	2	Scattered cloud with temperatures around 8°C. Gentle westerly breeze. Dry.
14/12/2023	08:45-11:45	1	Mostly cloudy with temperatures of around 7°C. Fresh westerly breeze. Dry.
14/12/2023	12:25-15:25	2	Overcast with temperatures around 8°C. Fresh westerly breeze. Dry.
16/01/2024	09:05-11:50	1	Partly cloudy with temperatures of around 0°C. Gentle south-westerly breeze. Dry.
16/01/2024	12:45-15:30	2	Scattered clouds with temperatures around 2°C. Gentle south-westerly breeze. Dry.
14/02/2024	08:00-11:00	1	Overcast, with temperatures of around 11°C. Light south-westerly breeze. Dry.
14/02/2024	11:10-14:10	2	Mostly cloudy with temperatures around 12°C. Light south-westerly breeze. Light drizzle.
14/03/2024	09:00-12:05	1	Mostly cloudy with temperatures of around 11°C. Gentle southerly breeze. Light drizzle.
14/03/2024	12:50-16:00	2	Broken cloud with temperatures of around 13°C. Gentle southerly breeze. Dry.
29/09/2025	9:00-11:00	1	Overcast with temperatures of around 10°C. Gentle south-westerly breeze. Dry.
29/09/2025	11:00-13:00	2	Overcast with temperatures of around 10°C. Gentle south-westerly breeze. Dry.
08/10/2025	14:00-15:45	1	Mostly cloudy with temperatures around 14°C. Moderate westerly breeze. Dry.
08/10/2025	15:45-17:30	2	Mostly cloudy with temperatures around 14°C. Moderate westerly breeze. Dry.

Bats

The initial bat roost inspection and ground level tree assessments for the site were carried out on 29th June 2020 as part of the initial surveys for a previous planning application submitted to the South Dublin County Council (SHD3ABP-313145-22). Farm sheds within the site were also inspected for suitability for use by roosting bats. An updated bat roost appraisal and ground-level assessment of all buildings and trees within the subject lands, to examine their suitability to support roosting bats and potential to act as important landscape features for commuting/ foraging bats, was completed on the 4th April 2023. A subsequent bat roost appraisal and ground-level tree assessment survey was completed on the 7th April 2025.

The assessment was based on guidelines in *Bat Surveys for Professional Ecologists: Good Practice Guidance*[19] (Table 5-3 and Table 5-4) and included inspections of structures and trees for potential roost features (PRFs), and for signs of bats (staining at roost entrances, droppings, carcasses, insect remains).

Table 5-3: Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, applied according to professional judgement. (Taken from Collins (2023))

Potential Suitability	Description	
	Roosting habitats in structures	**Potential flight-paths and foraging habitats**
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels)	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviours
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions, and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats).	Habitat that could be used by small number of bats as flight-paths such as gappy hedgerow or unvegetated stream, but isolate, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.

[19] Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidance 4th edition*. The Bat Conservation Trust, London.

Potential Suitability	Description	
	Roosting habitats in structures	Potential flight-paths and foraging habitats
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lines watercourses and grazed parkland. Site is close to and connected to known roosts.

Table 5-4: Guidelines for categorising the potential suitability of PRFs on a proposed development site for bats, applied using professional judgement

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size of lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony.

Two separate bat activity surveys were undertaken within the lands by Scott Cawley Ltd. surveyors in the summer season in 2023 and 2024 (see Table 5-5 for full details). A bat activity survey was also undertaken by Scott Cawley Ltd. surveyors in 2025, to capture bat activity on site within the spring season (i.e. April/May) as per the BCT Guidelines[20]. Initial bat activity surveys were undertaken in June and July 2020. The surveys were designed with reference to methodologies in *Bat Surveys for Professional Ecologists: Good Practice Guidelines*[13], and survey details are provided in Table 5-5. Surveys involved activity surveys of walked transects along the boundaries of the proposed development site. Bat activity was recorded using a handheld bat detector (Batlogger-M2). Recordings collected in the field were analysed using specialist sound analysis software (Elekon BatExplorer) to aid in the identification of bat species by their calls, (where this was possible), using professional judgement and with reference to *British Bat Calls: A Guide to Species Identification*[21].

[20] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

[21] Russ, J. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter, United Kingdom. ISBN 978-1-907807-25-1.

Table 5-5: Details of bat surveys undertaken within the proposed development site

Date	Survey Time (Sunset)	Survey Type	Surveyor(s)	Weather Conditions
25/06/2020	21:30–23:52 (21:57)	Dusk Activity Survey	Scott Cawley Ltd.	Warm, humid weather (18-21°C), little wind. Very light showers.
23/07/2020	21:20–23:38 (21:35)	Dusk Activity Survey	Independent Ecologist – Kevin Delahunty	Dry and overcast, with temperatures around 19°C. Light breeze.
07/06/2023	22:10 - 23:50 (21:49)	Dusk activity survey	Scott Cawley Ltd.	Mild, mostly clear with temperatures around 12-13°C and light wind.
13/07/2023	03:44 - 05:30 (05:15)	Dawn activity survey	Scott Cawley Ltd.	Partially overcast with temperatures around 10-12°C. No rain in calm conditions.
12/06/2024	21:35–00:08 (21:53)	Dusk activity survey	Scott Cawley Ltd.	Mostly clear with temperatures around 12°C. No rain in calm conditions.
17/07/2024	21:08–22:36 (21:42)	Dusk activity survey	Scott Cawley Ltd.	Mostly clear with temperatures around 16°C. No rain in calm conditions
14/05/2025	21:02–23:17 (21:17)	Dusk activity survey	Scott Cawley Ltd.	Mostly clear with a light breeze and temperatures around 8°C. No rain in calm conditions

Amphibians and Reptiles

An assessment of habitat suitability for amphibians and reptiles was completed on the 7th April 2025, and previously on 4th April 2023, and 29th June 2020 by Scott Cawley Ltd. Suitable habitat for amphibians, such as ponds and wet ditches, and for reptiles, such as stone walls, rocks or logs suitable for basking, were recorded and mapped, as well as any direct observations of individuals.

Aquatic Surveys

Surveys of the Coldwater, Cooldown and Corbally Streams were conducted on the 9th July 2025 and the 26th July 2023. Survey effort focused on both instream and riparian habitats in the vicinity of each survey site (Figure 5-3). The surveys were conducted during bright weather and base flow riverine conditions. The watercourses at each survey site were described in terms of the important physical characteristics for both macro-invertebrates and white-clawed crayfish (WCC).

A broad aquatic habitat assessment was conducted utilising elements of the methodology given in the Small Stream Risk Score (SSRS) (EPA, 2015). All sites were assessed in terms of:

- Physical watercourse/waterbody characteristics (i.e., width, depth etc.)
- Substrate type, listing substrate fractions in order of dominance (i.e., bedrock, boulder, cobble, gravel, sand, silt etc.)
- River profile in the sampling area
- An appraisal of the macrophyte and aquatic bryophyte community at each site

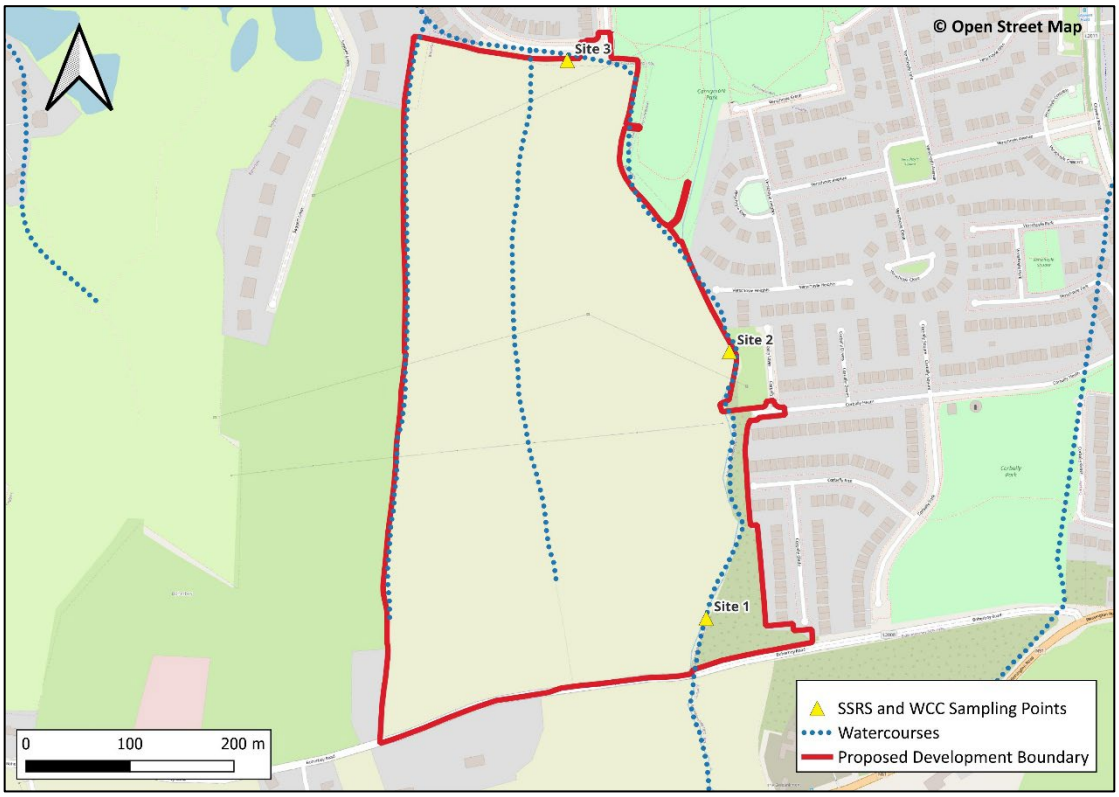


Figure 5-3: The locations of SSRS and WCC sampling points within the proposed development site

White-clawed crayfish

White-clawed crayfish (*Austropotamobius pallipes*) surveys were undertaken at the aquatic survey sites on the 26th July 2023 by Scott Cawley Ltd. ecologists under the NPWS licences C01/2023 and C02/2023 to capture and release crayfish to their site of capture, under condition no. 5 of the licence. As per Inland Fisheries Ireland recommendations, the crayfish licence sampling started at the uppermost site of the survey area to minimise the risk of transfer invasive propagules (including crayfish plague) in an upstream direction.

Hand-searching of instream refugia and sweep netting was undertaken according to Reynolds et al. (2010). Trapping of crayfish was not feasible given the small nature of the watercourses surveyed. An appraisal of white-clawed crayfish habitat at each site

was conducted based on physical channel attributes. Additionally, a desktop review of crayfish records within the wider survey area was undertaken.

A subsequent survey was undertaken conducted on the 9th July 2025 by suitably licensed Scott Cawley Ltd. ecologists following the methodology described above.

Small Stream Risk Score (SSRS)

A total of two number aquatic survey sites were assessed for biological water quality through SSRS on the 26th July 2023, and the 9th July 2025 by Scott Cawley Ltd. The SSRS was undertake at the two survey sites on the Corbally Stream within the subject lands on July 26th following the SSRS methodology as described by the EPA (EPA, 2015)

Aquatic ecological evaluation

The evaluation of aquatic ecological receptors contained within this report uses the geographic scale and criteria defined in the 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009).

Biosecurity

A strict biosecurity protocol including the Check-Clean-Dry approach was adhered to during surveys for all equipment and PPE used. Disinfection of all equipment and PPE before and after use with Virkon™ was conducted to prevent the transfer of pathogens or invasive propagules between survey sites. Surveys were undertaken at sites in a downstream order to minimise the risk of upstream propagule mobilisation. Where feasible, equipment was also thoroughly dried (through UV exposure) between survey areas. Any aquatic invasive species or pathogens recorded within or adjoining the survey areas were geo-referenced.

5.2.5 Survey Limitations

Breeding and wintering bird surveys were not undertaken for the 2025 and 2024-2025 season respectively. However, habitat surveys undertaken in December 2024 and April 2025 indicated that there had been no significant change in the suitable habitats present for breeding and wintering bird, therefore it is considered unlikely that there is any significant change in the ecological baseline for breeding and wintering bird species. Therefore, surveys which were not undertaken to inform this biodiversity chapter of the EIAR are not considered to pose any limitations to the survey results and assessment of potential impacts to Key Ecological Receptors from the proposed development.

5.2.6 Ecological Evaluation and Impact Assessment

Ecological Evaluation

Ecological receptors (including identified sites of ecological importance) are valued with regard to the ecological valuation examples set out in *Guidelines for Assessment*

of Ecological Impacts of National Roads Schemes: Revision 2[22] and the guidance provided in *Guidelines for Ecological Impact Assessment in the UK and Ireland* [23] – refer to Appendix 5.2 for examples of how ecological importance is assigned. In accordance with these guidelines, important ecological features within what is referred to as the Zone of Influence (ZoI) of the proposed development which are "both of sufficient value to be material in decision making and likely to be affected significantly" are deemed to be 'Key Ecological Receptors' (KERs). These are the ecological receptors which may be subject to significant effects from the proposed development, either directly or indirectly. KERs are those biodiversity receptors with an ecological value of local importance (higher value) or greater.

Impact Assessment

Ecological impact assessment is conducted following a standard source-pathway-receptor model, where, in order for an impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potentially significant effect would not occur.

- Source(s) – e.g. pollutant run-off from proposed works
- Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats
- Receptor(s) – e.g. wetland habitats and the fauna and flora species they support

Characterising and Describing the Impacts

The parameters considered in characterising and describing the potential impacts of the proposed development are per the EPA's *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*[24] and CIEEM's *Guidelines for Ecological Impact Assessment in the UK and Ireland* [25] whether the effect is positive, neutral or negative; the significance of the effects; the extent and context of the effect; the probability, duration and frequency of effects; and cumulative effects.

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. The following development types are included in considering cumulative effects:

[22] NRA (2009) *Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2*. National Roads Authority.
[23] CIEEM (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland*. Version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester, UK.
[24] Environmental Protection Agency. (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports*. April 2022.
[25] CIEEM (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3*. Chartered Institute of Ecology and Environmental Management, Winchester

- Existing projects (under construction or operational)
- Projects which have been granted consent but not yet started
- Projects for which consent has been applied for which are awaiting a decision, including those under appeal
- Projects proposed at a plan level, if relevant (e.g. future strategic infrastructure such as roads or greenways)

The likelihood of an impact occurring, and the predicted effects, can also be an important consideration in characterising impacts. In some cases, it may not be possible to definitively conclude that an impact will not occur. In these cases, the evaluation of significant effects is based on the best available scientific evidence, but where reasonable doubt remains then the precautionary principle is applied, and it may need to be assumed that significant effects may occur. Professional judgement is used in considering the contribution of all relevant criteria in determining the overall magnitude of an impact.

Significant Effects

In determining whether potential impacts will result in significant effects, the CIEEM guidelines were followed. The approach considers that significant effects will occur when there are impacts on either:

- the structure and function (or integrity) of defined sites, habitats or ecosystems; or
- the conservation status of habitats and species (including extent, abundance and distribution).

Integrity

The term "*integrity*" may be regarded as the coherence of ecological structure and function, across the entirety of a site that enables it to sustain all of the biodiversity or ecological resources for which it has been valued (NRA, 2009).

The term "*integrity*" is most often used when determining impact significance in relation to designated areas for nature conservation (e.g. SACs, SPAs or pNHA/NHAs) but can also be the most appropriate method to use for non-designated areas of biodiversity value where the component habitats and/or species exist with a defined ecosystem at a given geographic scale.

An impact on the integrity of an ecological site or ecosystem is considered to be significant if it moves the condition of the ecosystem away from a favourable condition: removing or changing the processes that support the sites' habitats and/or species; affect the nature, extent, structure and functioning of component habitats; and/or, affect the population size and viability of component species.

Conservation Status

Similar definitions for conservation status given in the EU Habitats Directive 92/43/EEC, in relation to habitats and species, are also used in the CIEEM (2024) and NRA (2009) guidance which are summarised as follows:

- For natural habitats, conservation status means the sum of the influences acting on the natural habitat and its typical species, that may affect its extent, structure and functions as well as its distribution, or the long-term survival of its typical species, at the appropriate geographical scale
- For species, conservation status means the sum of influences acting on the species concerned that may affect the abundance of its populations, as well as its distribution, at the appropriate geographical scale

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status, having regard to the definitions of favourable conservation status provided in the EU Habitats Directive 92/43/EEC – i.e. into the future, the range, area and quality of habitats are likely to be maintained/increased and species populations are likely to be maintained/increased.

According to the CIEEM methodology (2024), if it is determined that the integrity and/or conservation status of an ecological receptor will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international). In some cases, an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a species which is considered to be internationally important. However, an impact may occur at a local level on this internationally important species. In this case, the impact on an internationally important species is considered to be significant at only a local, rather than an international level.

5.3 The Existing and Receiving Environment (Baseline Situation)

5.3.1 Subject Lands

The subject lands are located in the townland of Boherboy in Saggart, to the southwest of Dublin city, Co. Dublin. The lands are situated immediately to the south of the Carrigmore residential estate, west of Corbally residential estate and east of agricultural lands. The Boherboy Road forms the southern boundary of the site.

The proposed development lands contain habitats predominantly found in an agricultural setting comprising two fields grazed by cattle with discrete areas of wet grassland in both fields as well as patches of scrub. A relatively small patch of rough grassland occurs in the southeast of the lands, east of the Corbally Stream. The two agricultural fields are divided by a hedgerow and stream known as the Cooldown, while the Corbally Stream abounds the northern and part of the eastern boundaries, and the

Coldwater stream runs along the western boundary. Mature treelines and hedgerows bordered by dry grassy verges, run along the boundaries of the site and along the middle hedgerow and Cooldown stream. The Corbally, Cooldown and Coldwater streams are tributaries of the Camac River, known as EPA waterbody (Camac_20) located to the north of the proposed development site. The Camac River comprises the EPA waterbodies (Camac_20, Camac_30 and Camac_40) which flow into the River Liffey; transitional EPA waterbodies (Liffey Estuary Upper and Liffey Estuary Lower) that ultimately connects the proposed development site to the wider surface waterbody network (i.e. Dublin Bay and the Irish Sea) downstream.

5.3.2 Designated Areas

European Sites

Special Areas of Conservation (SACs) are designated under the EC Habitats Directive (92/43/EEC), which is transposed into Irish law through a variety of legislation including the Birds and Habitats Regulations and the Planning and Development Acts. The legislation enables the protection of certain habitats (listed on Annex I of the Directive) and/or species (listed on Annex II). Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC). This allows for the protection of bird species on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and important wetland habitats for birds.

SACs and SPAs are offered additional protection under county development plans, as is the case for the *South Dublin County Development Plan 2022-2028* through Policy NCBH3 on European sites which requires that planning authorities give due regard to their protection in planning policies and decisions (South Dublin County Council, 2022).

The proposed development site is located within the Liffey (Liffey_SC_090) sub-catchment, which is contained within the Liffey and Dublin Bay catchment which drains into the Irish Sea.

The Corbally Stream runs from south to north along much of the eastern boundary of the proposed development and intersects the eastern field, which comprises a small area of rough grassland. It then flows along the northern boundary westwards where the two smaller streams within the site, the Cooldown and the Coldwater, flow into it. The Corbally Stream then merges into the Camac River *c*. 2.5km north of the proposed development site. The Camac then joins the River Liffey *c*. 9.6km northeast of the proposed development and discharges into Dublin Bay. These surface water features, therefore hydrologically link the proposed development to European sites therein.

There are seven SACs and five SPAs either within the vicinity of the proposed development or downstream in Dublin Bay as follows:

- Glenasmole Valley SAC (001209) is located *c.* 4.17km south-east of the proposed development site. This SAC has been designated for the priority Annex I habitats Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites),

Petrifying springs with tufa formation (Cratoneurion), and for *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae).

- Wicklow Mountains SAC (002122), which is *c.* 5.3km south-east of the proposed development site and designated for freshwater, upland and oak woodland habitats, and populations of otter *Lutra lutra*.
- Wicklow Mountains SPA (004040), which is *c.* 8.9km south-east of the proposed development site and designated for merlin *Falco columbarius* and peregrine *Falco peregrinus*.
- Rye Water Valley/Carton SAC (001398), which is *c.* 10.3km north-west of the proposed development site. This SAC has been designated for the priority Annex I habitat Petrifying springs with tufa formation (Cratoneurion), and populations of the Annex II narrow-mouthed whorl snail *Vertigo angustior* and Desmoulin's whorl snail *Vertigo moulinsiana*.
- Red Bog, Kildare SAC (000397), which is c. 11.1km south-west of the proposed development site and designated for transition mires and quaking bogs.
- Poulaphouca Reservoir SPA (004063), which is *c.* 11.3km south-west of the proposed development site and designated for greylag goose *Anser anser* and lesser black-backed gull *Larus fuscus*.
- South Dublin Bay SAC (000210), which is c. 15.8km north-east of the proposed development site and designated for dune and tidal habitats.
- South Dublin Bay and River Tolka Estuary SPA (004024), which is *c.* 15.8km north-east of the proposed development site and designated for a range of wintering wetland bird species.
- North Bull Island SPA (004006), which is *c.* 16.3km north-east of the proposed development site and designated for a range of wintering wetland bird species.
- North Dublin Bay SAC (000206), which is *c.* 19.3km north-east of the proposed development site and designated for a range of coastal habitats, and populations of petalwort *Petalophyllum ralfsii*.
- North-west Irish Sea SPA (004236), which is *c.* 19.8km north-east of the proposed development site and designated for a range of breeding and wintering seabird bird species.
- Rockabill to Dalkey Island SAC (003000), which is c. 22.3km east of the proposed development site and designated for reefs and harbour porpoise *Phocoena phocoena*.

These sites and their location in relation to the proposed development site are illustrated in Figure 5-4.

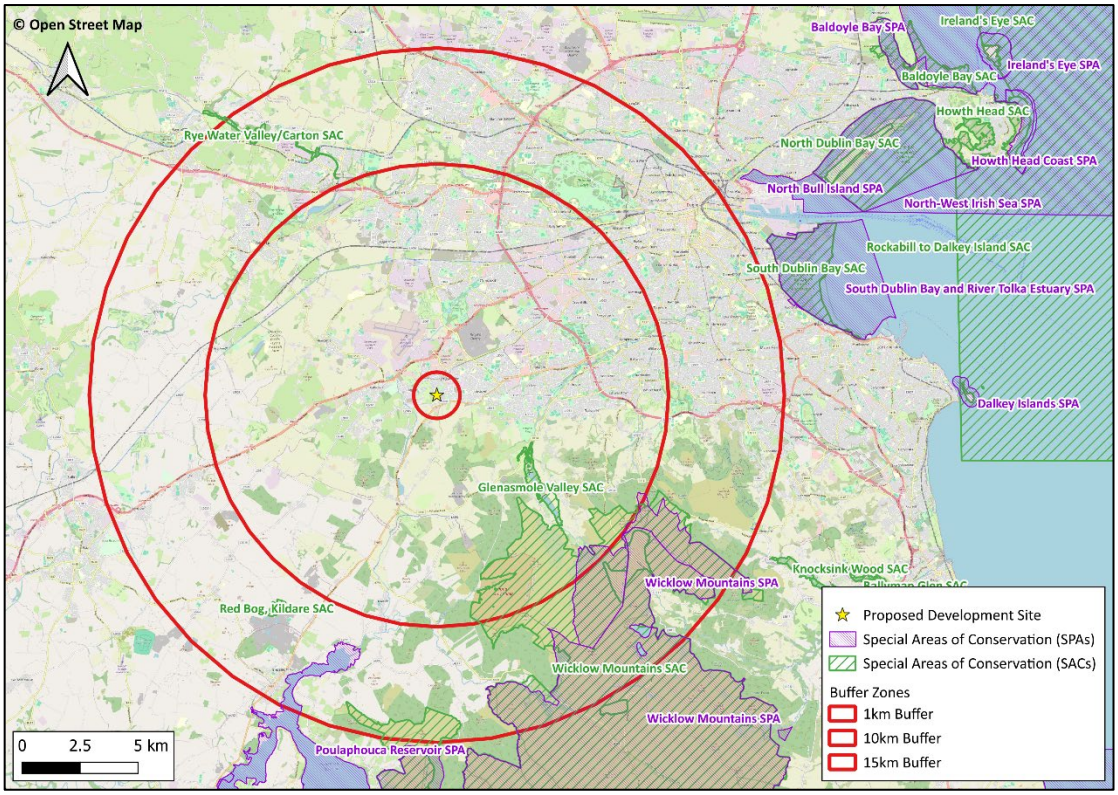


Figure 5-4 European sites in the vicinity of the proposed development site, with indicative buffer distances provided for illustrative purposes

There is no Q-value data available from 2022 for the Corbally, Coldwater and Cooldown streams. However, the Water Framework Directive (WFD) River Waterbody status 2019-2024 is listed as 'Good' for the Camac_020, which includes all three of these waterbodies. These surface water features have been listed as 'At Risk' waterbodies by the EPA. The WFD status (2019-2024) of the Camac_30 and Camac_40 are assessed as 'Poor' and have been listed as 'At Risk' waterbodies by the EPA. The Liffey Estuary Upper Transitional Water Body (TWB) is of 'Moderate' WFD status (2019-2024), while its risk status is under 'Review'. The Liffey Estuary Lower TWB, has 'Moderate' WFD status (2019-2024), and has been projected as 'At Risk' by the EPA. The Dublin Bay Coastal Waterbody (CW) has a WFD status of 'Good' (2019-2024), and is listed as 'Not at risk'. and the water quality is considered to be unpolluted by the EPA[26].

The site overlaps with two Groundwater Bodies (GWB), namely the Kilcullen GWB and the Dublin GWB. The Kilcullen GWB is currently classified by the EPA as having 'Good' status (2019-2024) and is characterised as 'At Risk', while the Dublin GWB is currently of 'Good' status, with its GWB Risk status under 'Review'. The Kilcullen GWB and Dublin GWB overlaps with two European sites that are designated in part for groundwater dependent terrestrial habitats, i.e., Glenasmole Valley SAC and the Rye Water Valley/Carton SAC, respectively. However, the general groundwater flow

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

direction in the Dublin GWB is towards the coast and the River Liffey, which is downstream of the Rye Water Valley/Carton SAC. The general groundwater flow in the Kilcullen GWB is in the order of a couple of hundred metres, with discharge occurring to the closest surface water feature. As the site contains three watercourses, there is no hydrogeological connectivity with Glenasmole Valley SAC.

There are four SPAs within the vicinity of the proposed development site, or hydrologically connected to the site, designated for wintering SCI species that are known to forage and/or roost at inland sites in Ireland; Poulaphouca Reservoir SPA (004063) (located is *c.* 11.3km south-west), South Dublin Bay and River Tolka Estuary SPA (004024) (located *c.* 15.8 km northeast), North Bull Island SPA (004006) (located *c.* 16.3 northeast), North-west Irish Sea SPA (004236) (located *c.* 19.8km northeast). There is also one SPA, Wicklow Mountains SPA (004040), located *c.* 8.9km southeast of the proposed development, designated for birds of prey (peregrine and merlin) that are known to not hold exclusive home ranges.

In addition, Wicklow Mountains SAC, which contains a considerable range of QI interests, is designated for mobile QI species (otter *Lutra lutra*) known to utilise wide range of aquatic habitats (freshwater and marine) on the east coast. However, this SAC is not hydrologically connected to the proposed development site.

The subject lands do not contain any habitats for which any European sites have been designated. However, based on a desk study and site surveys, they do contain suitable habitat for qualifying interest or special conservation interest species for which nearby European sites have been designated, as described in Section 5.3.

Nationally Designated Sites

Natural Heritage Areas (NHAs) are designations under the Wildlife Acts in order to protect habitats, species or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with European sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are typically offered protection under planning legislation which requires that planning authorities give recognition to their ecological value[27].

South Dublin County Council includes policies and objectives for the protection of these NHAs within the South Dublin County Development Plan 2022-2028 (South Dublin County Council, 2022).

Policy NCBH2 states to "*Protect, conserve, and enhance the County's biodiversity and ecological connectivity having regard to national and EU legislation and Strategies*". Objective 2 of this policy is "*To ensure the protection of designated sites in compliance with relevant EU Directives and applicable national legislation*." Similarly, objective 3 of this policy is "*To protect and conserve the natural heritage of the County, and to conserve and manage EU and nationally designated sites and non-designated locally*

[27] NPWS (2019). Natural Heritage Areas Webpage. Available online at www.npws.ie/protected-sites/nha. Accessed 15th April 2025.

important areas which act as 'stepping stones' for the purposes of green infrastructure and Article 10 of the Habitats Directive."

Similarly, policy NCBH4 states that it is the policy of South Dublin County Council to "*Protect the ecological, visual, recreational, environmental and amenity value of the County's proposed Natural Heritage Areas and associated habitats and species*". Objective 2 of this policy is "*To restrict development within or adjacent to a proposed Natural Heritage Area to development that is directly related to the area's amenity potential subject to the protection and enhancement of natural heritage and visual amenities including biodiversity and landscapes*".

The subject lands do not overlap with any NHAs or pNHAs (see Figure 5-5). There are 13 national sites located within *c.* 15km of the proposed development, of which all are pNHAs. The nearest nationally designated site is Lugmore Glen pNHA, located *c.* 1.4km southeast of the proposed development.

There are no pNHAs hydrologically connected to the proposed development site within a 15km buffer zone. However, there are other pNHAs such as North Dublin Bay pNHA, South Dublin Bay pNHA and Dolphins, Dublin Docks which are hydrologically connected via surface water network to the proposed development which are located downstream, and are designated for similar reasons as the overlapping European sites.

The pNHAs within the vicinity of the proposed development are as follows:

- Lugmole Glen pNHA (001212), located *c.* 1.4km south west of the proposed development site which has been designated for its example of wooded glen habitat and a Red Data Book species *Lamiastrum galeobdolon*.
- Slade of Saggart and Crooksling Glen pNHA (000211), located *c.* 1.6km south-west of the proposed development site. The site is designated for its good example of wooded river valley and wetland system, and the presence of rare flora and fauna.
- Dodder Valley pNHA (000991), located *c.* 4.8km east of the proposed development site. The site is designated for its last remaining stretch of natural riverbank vegetation on the River Dodder in the built-up Greater Dublin Area and for its biodiversity.
- Glenasmole Valley pNHA (001209), located *c.* 4.2km south-east of the proposed development site. There is no published information available for this designated site from the NPWS. It overlaps with the Glenasmole Valley SAC and is likely to be designated for the same reasons, i.e., for the presence priority Annex I habitats Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) and Petrifying springs with tufa formation (Cratoneurion), and for Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae).

- Grand Canal pNHA (002103), located *c.* 5.5km north of the proposed development site. The site is designated for its habitats and biodiversity.
- Kilteel Wood pNHA (001394), located *c.* 7.8km south-west of the proposed development site, which is designated for its fine example of deciduous woodland.
- Liffey Valley pNHA (002103), located *c.* 8.6km north of the proposed development site. The site is designated for its diversity of habitat and for rare flora.
- Rye Water Valley/Carton pNHA (001398), located *c.* 10km north-west of the proposed development site. There is no published information available for this designated site from the NPWS. It overlaps with the Rye Water Valley/Carton SAC and is likely to be designated for the same reasons, i.e. the priority Annex I habitat Petrifying springs with tufa formation (Cratoneurion), and populations of the Annex II narrow-mouthed whorl snail and Desmoulin's whorl snail.
- Royal Canal pNHA (002103), located *c.* 10.3km north of the proposed development site. The site is designated for its habitats and biodiversity.
- Poulaphouca Reservoir pNHA (004063), located *c.* 11.3km south-west of the proposed development site. There is no published information available for this designated site from the NPWS. It overlaps with the Poulaphouca Reservoir SPA and is likely to be designated for the same reasons, i.e. wintering populations of greylag goose and lesser black-backed gull.
- Red Bog, Kildare pNHA (000397), located c. 10.8km south-west of the proposed development site. There is no published information available for this designated site from the NPWS. It overlaps with the Red Bog, Kildare SAC and is likely to be designated for the same reasons, i.e. transition mires and quaking bogs.
- Fitzsimon's Wood pNHA (001753), located *c.* 12.7km west of the proposed development site, which has been designated for its good example of birch woodland.
- Glencree Valley pNHA (001755), located *c.* 13.9km south-east of the proposed development site. The site is designated for its good example of deciduous woodland and habitat diversity.
- South Dublin Bay pNHA (000210), located *c.* 15.8km north-east of the proposed development site. There is no published information available for this designated site from the NPWS. It overlaps with the South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA and is likely to be designated for the same reasons, i.e. dune and tidal habitats and wintering bird populations.
- Booterstown Marsh pNHA (004024), located *c.* 15.8km north-east of the proposed development., which is designated for its tidal habitats, rare flora and wintering bird populations.
- North Dublin Bay pNHA (000206), located *c.* 19.3km north-east of the proposed development site. There is no published information available for this designated site from the NPWS. It overlaps with the North Dublin

Bay SAC and North Bull Island SPA and is likely to be designated for the same reasons, i.e. dune and tidal habitats and wintering bird populations.

The nationally designated sites in the vicinity of the proposed development, their distance from the proposed development site and the reason for their designations are presented in Appendix 5.1.

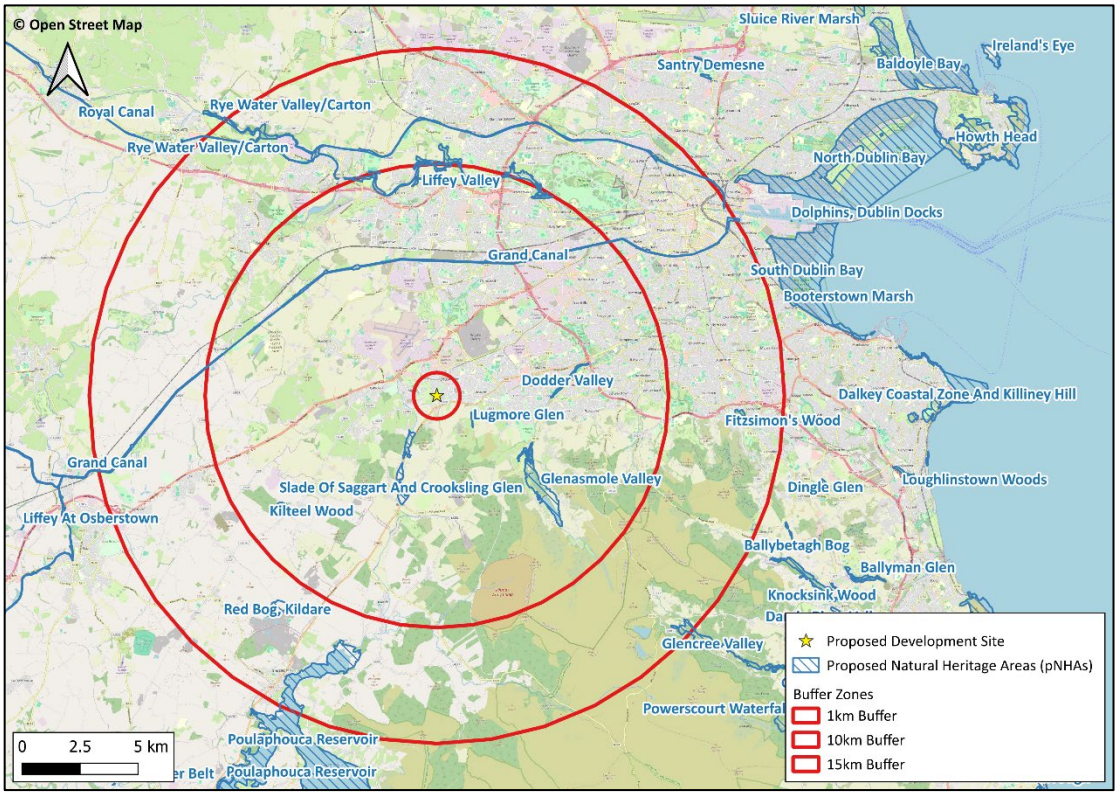


Figure 5-5: Nationally designated sites within the vicinity of the proposed development site.

5.3.3 Habitats and Flora

Habitats

The subject lands contain a range of habitats which are typical of the wider agricultural landscape found to the west and south of the proposed development (see Figure 5-6). A full list of species recorded within each habitat is included in Appendix 5.4.

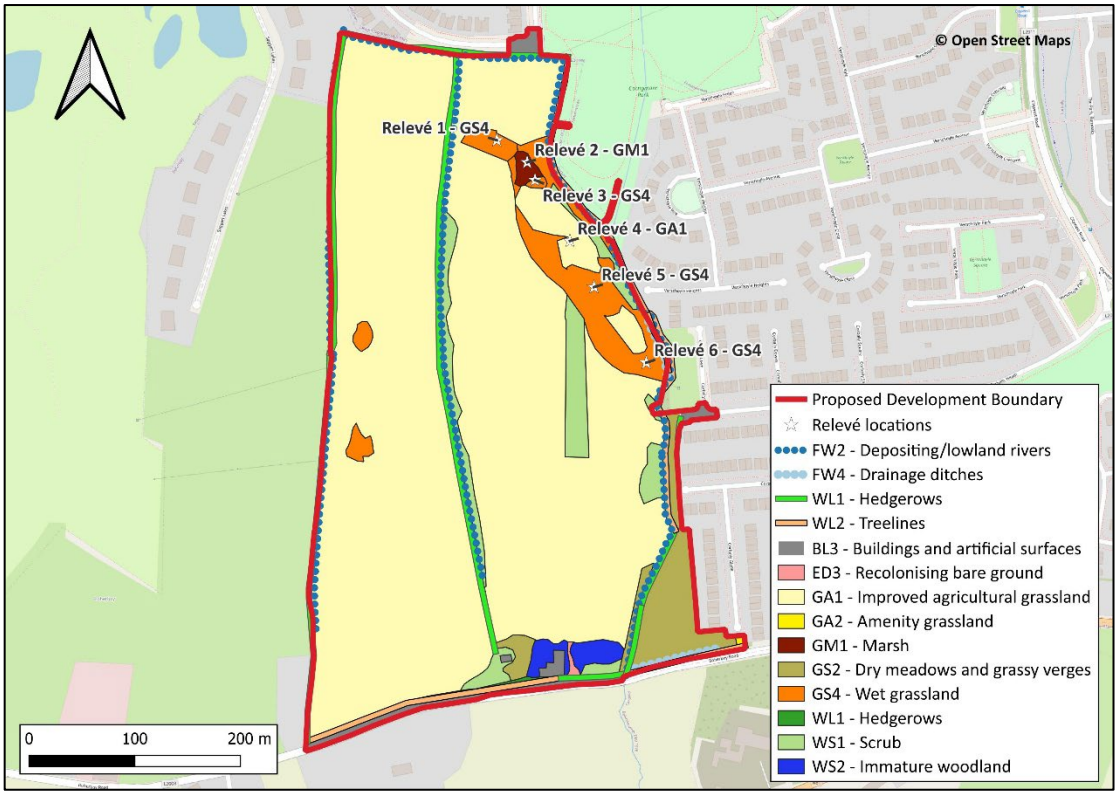


Figure 5-6: Habitats recorded within the proposed development boundary

Buildings and Artificial Surfaces (BL3)

There are six buildings/structures within the proposed development site. All of these are located in the south of the site, with five in the eastern field, and one in the western field. These buildings are a mixture of cattle sheds, and outhouses, all in various states of disrepair. The intact cattle shed lies adjacent to the entrance in the southeast of the site, and consists of stone walls with a corrugated iron roofing, with the remaining section roofless and heavily encroached upon by *Hedera helix* and the surrounding vegetation. A large open dilapidated corrugated structure is also present adjacent to the cattle shed, which had collapsed when surveys were carried out in 2021 (Plate 5-1). Three small outhouses are also present in this field, all of which are in a poor state of disrepair, comprised of a mixture of stone and brick walls, and corrugated roofing. However, most of the roof se7ction are no longer present on these buildings. These buildings are largely open and exposed with encroachment from the surrounding vegetation. The shed in the western field is comprised of concrete stone walls, with a fully intact corrugated iron roof. This building is also heavily encroached upon by the surrounding vegetation, which mainly consisted of ivy *Hedera helix* (Plate 5-2). This habitat is also represented by the Boherboy Road, which lies to the south of the proposed development site, and roads within the Carrigmore Green and Corbally Heath.

This habitat is of local importance (lower value) due to its artificial nature.

Plate 5-1: Cattle shed and outbuildings in the southeast of the site

Plate 5-2: Intact building in the southwest of the site

Recolonising Bare Ground (ED3)

This habitat occurs inside the entrance of the eastern field from the Boherboy Road, adjacent to the cattle shed (Plate 5-3). This area of the site is heavily poached as a result of cattle movement over this area, resulting in bare ground. Plant species identified within this habitat include; *Persicaria maculosa, Jacobaea vulgaris, Rumex acetosa, Rumex obtusifolius*, *Petasites pyrenaicus, Cardamine hirsuta* and *Urtica dioica.*

Recolonising bare ground is a transient habitat that has developed as a result of disturbance and is relatively species poor. Therefore, this habitat is valued as being of a local importance (lower value).

Plate 5-3 Recolonising bare ground in the south of the site.

Improved Agricultural Grassland (GA1)

Agricultural grassland is the dominant habitat type within the proposed development site, and occurs in both the central and western fields in the central part of the site. The western most field is ungrazed, and managed by cutting, whilst the eastern field is grazed by cattle, resulting in areas of heavy poaching and nutrient input from the

livestock (Plate 5-4). Dominant grass species in the eastern field include *Anthoxanthum odoratum*, *Arrhenatherum elatius*, *Lolium perenne, Holcus lanatus,* and *Dactylis glomerata.* The dominant forb species present include; *Rumex acetosa, Urtica dioica, Trifolium repens, Cirsium arvense, Heracleum sphondylium, Ranunculus repens, Rumex obtusifolius, Cerastium fontanum*, and *Jacobaea vulgaris. Cardamine hirsuta* is present in areas that are partly waterlogged due to cattle poaching, with *Sonchus arvensis, Carex hirta, Odontites vernus* and *Potentilla reptans* occasionally occuring in the north of the site. The western field has a similar species composition to the eastern field, with the addition of *Taraxacum officinale agg., Bellis perennis, Rumex crispus*, *Stellaria graminea*, and *Potentilla anserina.*

Two relevés (relevés 3 and 4) were undertaken within this habitat in the eastern field, close to the wet grassland and marsh habitats. See Appendix 5.4 for the relevé survey results.

Given the common and widespread species found within this habitat type, and intensive management, it is of local importance (lower value).

Plate 5-4: Improved agricultural grassland in the western field

Plate 5-5: Improved agricultural grassland in the eastern field

Improved amenity grassland (GA2)

This habitat is species poor and managed for recreational and landscaping purposes. Within the proposed development boundary, this habitat is found within three small area; the proposed access routes into Carrigmore park, to the northeast of the site and Corbally Glade, to the southeast. This habitat is widespread in the surrounding landscape, and is represented by parks, sport pitches and managed lawns in residential areas and commercial properties.

Given the common and widespread species found within this habitat type, its widespread presence in the wider landscape and intensive management, it is of local importance (lower value).

Dry Meadows and Grassy Verges (GS2)

This habitat type is present in both a mosaic habitat with scrub (WS1) in the southwest of the eastern field (Plate 5-6), and on its own in the easternmost field (Plate 5-7), that lies between Corbally Glade and the Corbally Stream.

This habitat present in the south of the eastern field occurs in a mosaic with scrub and is dominated by tall herbs such as *Cirsium vulgare, Cirsium arvense, Rumex crispus, Urtica dioica.* The quality of this habitat is poor, with trampling and cattle poaching evident throughout.

The habitat in the easternmost field is comprised of grasses such as *Dactylis glomerata, Arrhenatherum elatius* and *Holcus lanatus,* and forb species such as *Heracleum sphondylium, Chamaenerion angustifolium, Ranunculus acris, Ranunculus repens, Tussilago farfara, Vicia cracca*, and *Veronica chamaedrys*. There was evidence of dumping of garden waste within this area from the adjacent housing estate. This area contained a high proportion of non-native species, including the aforementioned Third Schedule species *Allium triquetrum* and *Hyacinthoides hispanica.* In addition, to this, several non-Third Schedule non-native invasive species are also present within this area, namely *Petasites pyrenaicus, Buddleja davidii* and *Crocosmia* x *crocosmiiflora.*

The heavy presence of *Urtica dioica* in the eastern field indicates nutrient rich soils which limits the species diversity of this habitat. Due to the limited species diversity and high proportion of non-native invasive species in this habitat, it is valued of local importance (lower value).

Plate 5-6: Dry meadows and grassy verges habitat in the eastern field of local (low) importance

Plate 5-7: Dry meadows and grassy verges habitat in the eastern field of local (low) importance

Wet Grassland (GS4)

This habitat type has a patchy distribution along the western boundary of the eastern field to the east of the Corbally stream (Plate 5-8). This habitat is in poor condition due to frequent cattle poaching. The species composition identified here includes *Juncus effusus, Juncus conglomeratus, Epilobium hirsutum, Carex hirta, Glyceria declinata, Nasturtium officinale, Ranunculus repens, Veronica beccabunga, Potentilla anserina, Cardamine hirsuta, Hypericum tetrapterum,* and *Persicaria maculosa*. Two small, discrete areas of this habitat occur within the central portion of the western field, indicated by the abundance of *Juncus* spp. and the moss *Calliergonella cuspidata.* A drain had been dug on site and was recorded during the habitat surveys in July 2025 in the western area of the southernmost section of this habitat as part of the maintenance for agricultural land on the site.

Three relevés (relevés 1, 5 and 6) were undertaken within this habitat in the eastern field, close to the area of marsh habitat. See Appendix 5.4 for the relevé survey results.

Despite some areas of heavy poaching, as the species assemblage found in this habitat is relatively diverse, it is valued as of local importance (higher value).

Plate 5-8 Wet grassland habitat in the north east of the proposed development

Marsh (GM1)

A small area of marsh habitat occurs in the northeastern part of the eastern field of the site (Plate 5-9). This habitat is indicated by the presence of standing water, and the species *Typha latifolia, Sparganium erectum, Nasturtium officinale, Juncus effusus, Juncus articulatus, Juncus inflexus, Equisetum palustre* and *Calliergon cordifolium.* Scattered *Salix cinerea* also occurs within this habitat type. This habitat grades into the wet grassland habitat at its margins. A drain had been dug on site and was recorded during the habitat surveys in July 2025 in the eastern area of this habitat as part of the maintenance for agricultural land on the site.

A single relevé (relevé 2) were undertaken within this habitat in the proposed development site. See Appendix 5.4 for the relevé survey results.

While this habitat is relatively species poor, it occurs within a mosaic of a habitat that is considered to be of local importance (higher value). Furthermore, marsh habitat has a relatively limited extent in the broader landscape, and it has the potential to develop into a more species rich habitat and supporting habitat to other species. Therefore, this area of habitat is considered to be of local importance (higher value).

Plate 5-9 Marsh habitat in the north east of the proposed development

Scrub (WS1)

Scrub habitat was present in the south of the site, in the south eastern corner of the western most field (Plate 5-10), in a central strip within the eastern field, and at the southern boundary of the eastern field. A small patch of scrub also occurs adjacent to the Corbally residential estate, east of the Corbally Stream. The section of scrub within the central strip of the eastern field and at the southeastern corner of the western field had been cut back at the time of survey in 2025, but showed signs of regrowth of typical scrub species such as *Rubus fruticosus agg.* and *Crataegus monogyna*. This habitat is generally dominated by *Rubus fruticosus agg*. on the proposed development site, but also includes other shrubby and spinose species; *Crataegus monogyna, Prunus spinosa, Sambucus nigra, Rosa canina, Symphoricarpos albus, Lonicera nitida, Heracleum sphondylium, Urtica dioica*, and *Hedera helix*.

This habitat is of local importance (lower value) due to its low species diversity and common nature of the habitat in the wider landscape.

Plate 5-10 Scrub habitat in the south of the proposed development

Immature woodland (WS2)

This habitat type is present in a mosaic with scrub in the eastern field adjacent to the farm buildings (Plate 5-11). This habitat included a mixture of young and mature trees such as *Acer pseudoplatanus, Fraxinus excelsior, Sambucus nigra,* and *Fagus sylvatica.* These trees act as a canopy cover over the scrub habitat, and have started to encroach into the farm buildings.

Due to the variety in habitat this provides in a relatively species-poor area, this habitat is valued as being of local importance (higher value).

Plate 5-11 Immature woodland habitat in the south of the site

Hedgerows (WL1)

Hedgerows are present in the north of the site along the boundary, along the central boundary (Plate *5-12*), and in a mosaic with treelines along the western and eastern site boundaries (Plate 5-13). A hedgerow appraisal has been carried out for all hedgerows within the site, as per Foulkes et al., (2013).

The hedgerows along the central and western boundaries have been heavily managed, consisting of species such as *Crataegus monogyna*, *Prunus spinosa, Euonymus europaeus*, *Lonicera periclynemum*, *Rubus fruticosus,* and *Rosa canina*. Scattered trees, such as *Fraxinus excelsior* are also present within these hedgerows. The understorey flora included *Arum maculata*, *Anthriscus sylvestris*, *Ficaria verna*, *Veronica chamaedrys*, *Viola reichenbachiana*, *Primula vulgaris* and *Solanum dulcamara*.

The central and western hedgerows on the site provide cover and shelter for the local wildlife, and due to their good condition, close association with the treeline habitat, and connection they provide to the wider landscape, are valued as being local importance (higher value).

The hedgerow along the eastern most boundary is well established and is beginning to transition into a treeline. Species identified here include *Crataegus monogyna, Prunus spinosa, Rubus fruticosus agg., Rosa canina, Fraxinus excelsior, Salix caprea, Corylus avellana, Ilex aquifolium, Symphoricarpos alba* and *Sambucus nigra*. Understorey species include *Arum maculata*, *Anthriscus sylvestris*, *Geranium robertianum, Ficaria verna, Veronica chamaedrys, Viola reichenbachiana, Viola riviana, Primula vulgaris* and *Anemonoides nemorosa.* The eastern hedgerow forms

part of the townland boundary between the Boherboy (to the west) and Corbally (to the east) townlands.

Similarly to the eastern hedgerow, the northern boundary hedgerow forms part of the townland boundary between the Boherboy (to the south) and Fortunestown (to the north) townlands. This hedgerow is somewhat patchy in sections along Carrigmore Avenue. Overstorey species identified here include *Crataegus monogyna, Prunus spinosa, Rubus fruticosus agg., Fraxinus excelsior, Salix caprea,* and *Ulex europeaus*.

The eastern and northern hedgerows are both associated with the Corbally stream, provide connectivity with other hedgerow features within the wider landscape and provide cover and shelter for the local wildlife. Furthermore, their status as a townland boundary indicates that their historical significance is high within the wider landscape. Due to their good condition, age, close association with the treeline and depositing/lowland river habitats, and connection they provide to the wider landscape, these hedgerows are valued as being of county importance.

Plate 5-12 Central hedgerow within the site adjacent to the Cooldown stream of local importance (higher value)

Plate 5-13 Eastern boundary hedgerow (occurring in a mosaic with treeline habitat) within the site adjacent to the Corbally stream of County importance

Treelines (WL2)

Mature treelines border the proposed development site, along the southern boundary, and in a mosaic with hedgerows along the western boundary border of the two fields, and the eastern boundary (as described above) (*Plate 5-14* & *Plate 5-15*). A double treeline is also present along the banks of the Corbally Stream. This habitat is present as a well-established, mature treeline, with native and non-natives both occurring. Species found include; *Fraxinus excelsior, Fagus sylvatica*, *Acer pseudoplatanus*, *Salix cinerea*, and *Sambucus nigra*. This habitat occurs alongside hedgerow habitat in some areas, providing extensive cover and shelter for local wildlife, as well as linear commuting corridors. Understorey species include; *Anemonoides nemorosa*, *Anthriscus sylvestris*, *Chrysosplenium oppositifolium*, *Ficaria verna* and *Viola reichenbachiana*.

Due to the mature and good condition of the treelines present within the lands, and the corridors this habitat provides to the surrounding areas, this habitat is valued at local importance (higher value).

Plate 5-14: Treeline habitat along the southern boundary in a mosaic with hedgerow habitat of local (high) importance

Plate 5-15: A mature treeline along the banks of the Corbally Stream of local (high) importance

Depositing/Lowland Rivers (FW2)

This habitat type consists of the Corbally Stream, which flows downstream bordering an agricultural field and a patch of recolonising bare ground before flowing north along part of the eastern boundary (*Plate 5-16*), and along the northern boundary from east to west. This Stream is *c.* 1-2m wide, and *c.* 10-30cm deep at the time of the surveys, and consists of sections of soft, silty substrate for the majority of the stream, with some sections of pebble/small gravel substrate. There is evidence of heavy poaching by cattle along the banks and through the watercourse, as well as dumping where the river is accessible from the neighbouring residential areas at Carrigmore (*Plate 5-17*). Small number of fish were observed within the northern section of the Corbally Stream during the 2025 survey season. Instream vegetation includes *Apium nodiflora*, *Epilobium hirstum*, *Angelica sylvestris*, *Agrimonia eupatoria* and *Nasturtium officinale*. Fringing vegetation includes *Equisetum telmatiea*, *Galium aparine, Filipendula ulmaria, Urtica dioica, Rumex obtusifolius, Rubus fruticosus, Hedera helix,* and *Rumex acetosella.*

Plate 5-16 *Depositing/lowland river habitat (i.e. the Corbally Stream) along the eastern boundary of the site*

Plate 5-17 *Dumping is evident within sections of the depositing/lowland river habitat*

This habitat is also present in the Cooldown Stream, which is present along the central boundary of the two main fields, and the Coldwater Stream, which is present along the western boundary of the proposed development site (*Plate 5-18*). While these watercourses are EPA named watercourses, they are highly canalised and have been

excavated to enhance the drainage of the site, therefore have some ecological characteristics of drainage ditches as defined by the Fossitt habitat classification.[28]

The Cooldown stream had slow flowing water present at the time of survey in 2025. Similarly to the Corbally Stream, the Cooldown was heavily poached by cattle and was very soft underfoot. The stream emerges from a pipe in the southern part of the site. Plant species present along the banks of the Cooldown stream include; *Cardamine hirsuta, Veronica beccabunga, Ranunculus repens, Rumex acetosella, Juncus conglomeratus,* and *Mentha aquatica.* No instream vegetation was recorded.

Plate 5-18 Depositing/lowland river habitat along the central border of the site, which is seasonally dry (the Cooldown stream)

The Coldwater stream along the western field is partially inaccessible and is culverted for a section *c.* 120m in length along the central portion of the stream (*Plate 5-19*). Water levels vary within this stream, which was noted to be mostly dry during surveys in 2020 and 2021. However, the stream was wet during the surveys in 2023 and 2025, with some areas of stagnant and flowing water. Plant species identified around this water course include *Veronica beccabunga, Epilobium hirsutum*, as well as species associated with the hedgerow understorey: *Primula vulgaris, Ficaria verna* and *Geranium robertianum*. *Lemna* sp. Is present within areas of stagnant water along the southern section of this watercourse. A large patch of *Phalaris arundinacea* was observed at the northern section of the stream where it is connected to a drainage ditch from the adjacent field that lies to the west of the site.

[28] Fossitt, J.A. (2000). *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

Plate 5-19 Culverted section of the depositing/lowland river habitat along the Coldwater stream

Although parts of this habitat are in poor condition, due to the connectivity and variety in habitat this watercourse provides in an area of land dominated by agriculture, this habitat is of local importance (higher value).

Drainage ditches (FW4)

A small section of drainage ditch is located along a stretch of the southern boundary in the southeast of the site, which was dry on all visits to the site in 2023 and 2025 (*Plate 5-20*). Species present include *Urtica dioica, Hedera helix agg., Heracleum sphondylium, Anthriscus sylvestris* and *Galium aparine.*

Plate 5-20 Small section of drainage ditch habitat (dry) along the southern boundary of the proposed development site

As this habitat is heavily altered by pressures from agriculture and the nearby residential estates, and in poor condition and quality, this habitat is valued as being of local importance (lower value).

A small drainage ditch *c.* 60m in length has been excavated along the western side of the Corbally stream, and flows into the Corbally stream (*Plate 5-21*). At the time of the 2025 surveys, there was flowing water within this section of drainage ditch. While this habitat is heavily altered by pressures from agriculture, this habitat is valued as local importance (higher value) due to its hydrological connectivity to the Corbally stream.

Plate 5-21 Wet drainage ditch (right) that drains into the Corbally stream (left)

Rare and Protected Flora

No protected plant species contained within the Flora (Protection) Order, 2022, rare plant species contained within Ireland Red List No. 10 Vascular Plants (Wyse Jackson et al., 2016), or species listed on Irelands Red List No. 8: Bryophytes (Lockhart et al., 2012) were identified within the proposed development site during habitat surveys. A search of the NBDC database for records of rare and/or protected species within *c.* 2km of the proposed development site returned no records for Flora (Protection) Order 2022 plant species. The desktop study returned no records for Annex II flora species within *c.* 2km of the proposed development.

There is no suitable habitat within the proposed development site for the record of *Lamiastrum galeobdolon* returned from the NBDC, as it is a specialist species of old woodlands.

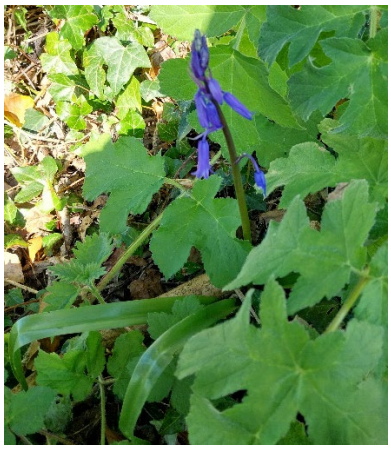
No rare and/or protected flora were recorded during the surveys, although the desk study returned records for them within *c.* 2km of the proposed development. Given the lack of suitable habitats for these species within the proposed development site, their populations are valued as local importance (higher value).

Non-native Invasive Flora

Two species of non-native, invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded within the proposed development site: Three cornered garlic *Allium triquetrum* (Plate 5-22) and Spanish bluebell *Hyacinthoides hispanica* (Plate 5-23). Both species were recorded within the small field located to the east of the Corbally stream as illustrated in Figure 5-7.

Plate 5-22: Three cornered garlic Allium triquetrum recorded along the eastern boundary of the site

Plate 5-23: Spanish bluebell Hyacinthoides hispanica recorded within the easternmost section of the site



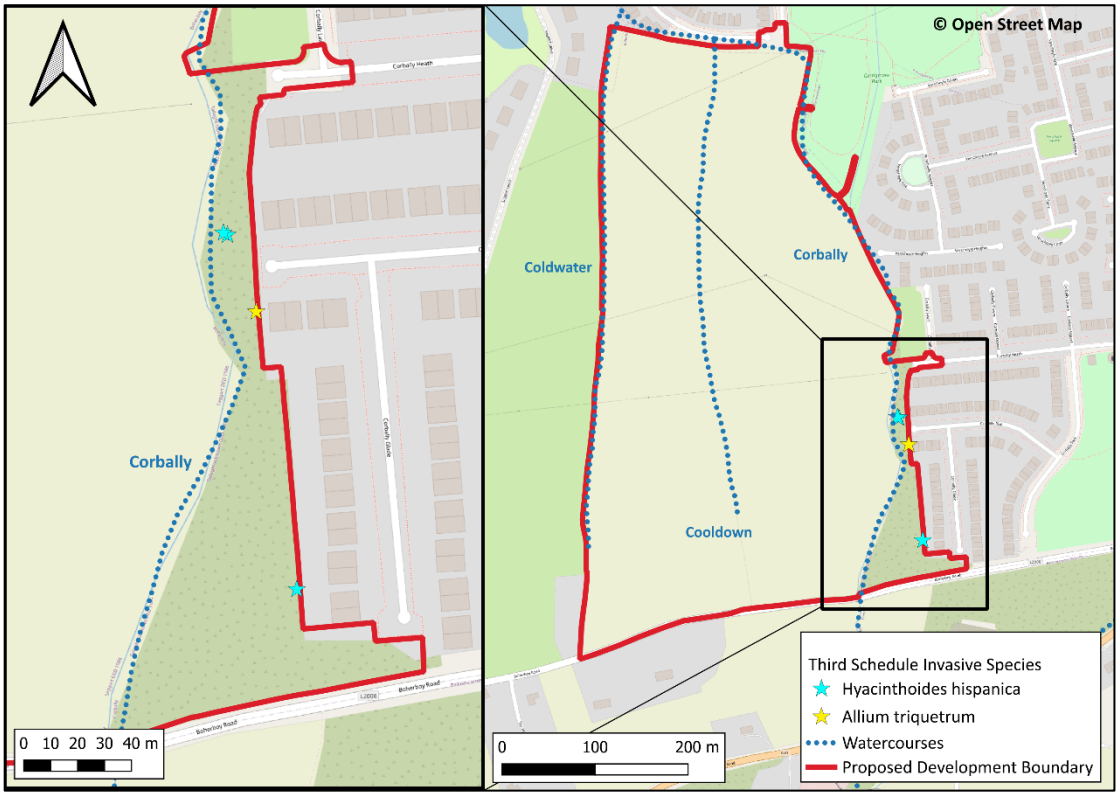


Figure 5-7: Third Schedule invasive species recorded within the proposed development boundary

A record of fringed water-lily *Nymphoides peltata* was recorded *c.* 1.2km north of the proposed development site in 2016 while giant hogweed *Heracleum mantegazzianum* *c.* 1.4km to the north in 2021 and, one record of *Reynoutria japonica* (2019) was identified within *c.* 2km of the lands from a NBDC data search. A record of three-

cornered garlic *Allium triquetrum* was returned, recorded *c.* 2km west of the lands in 2024.

Ecological evaluations are not applicable with non-native invasive species considering their invasive non-native status.

5.3.4 Fauna

Otter

Otter *Lutra lutra*, and their breeding and resting places, are protected under the Wildlife Acts. Otter are also listed on Annex II and Annex IV of the EU Habitats Directive where they are afforded strict protection. They are regarded to be of "Least Concern" in terms of conservation status in Ireland (Marnell *et al*., 2019). The NBDC database search returned one record for otter within *c.* 2km of the proposed development, from 1969, *c.* 1.9km north along the Camac River.

The Corbally Stream which flows along part of the eastern and northern boundary, the Coldwater Stream which begins and flows along the western site boundary, and the Cooldown Stream which begins and flows along the central hedgerow, flowing into the Corbally in the north of the site, were all checked for otter usage and habitat suitability. The Cooldown and Coldwater Streams are highly modified streams and were partly dry during some of the field surveys. No holts, couches or spraints were identified along any of these streams or in any areas of the proposed development.

The Cooldown and Coldwater Streams display some of the ecological characteristics of drainage ditches (i.e. they have been highly canalised and modified), and are unsuitable for holt/couch creation due to being periodically dry. The Corbally Stream has potential to be suitable for usage by otter, however this stream is very shallow with no bank in some sections (southern section), and would only be suitable for commuting otters in these areas. Where the bank is higher above the stream (central section), tree roots are present which could be utilised as holt/couch sites by local otters. There are two culverts in which the Corbally Stream flows further downstream in the north of the site (Plate 5-24).

Plate 5-24: Culvert which the Corbally stream flows into directly north of the proposed development site.

Otter is a Qualifying Interest (QI) species of the Wicklow Mountains SAC, located *c.* 5.3km southeast of the proposed development site. This European site is not hydrologically connected to the proposed development, and therefore there will be no impact from the proposed development on the Wicklow Mountains SAC otter population.

Due to the desktop records of otter along the Camac River, and the potential for the site to be used by commuting and/or foraging otters throughout the Corbally stream within the site, the local otter population is valued as being of county importance.

Badger

Badger *Meles meles*, and their breeding and resting places, are protected under the Wildlife Acts. The NBDC data search returned two records for badger within *c.* 2km of the proposed development site, the most recent of which (and closest record to the site) dates from 1992. A number of other records dating from 2012 were returned from the surrounding 2km Grid squares to the north of the proposed development site (O2P).

No evidence of badger, such as setts, snuffle holes, latrines or hair, was identified within the proposed development site during field surveys carried out. However, the habitats within the proposed development site (grassland, scrub, hedgerows) provide suitable foraging and commuting habitat for badger.

Six mammal holes were identified along the central boundary that separates the two main fields, within the bank of the Cooldown stream. A further two mammal holes were

identified along the western boundary of the site. Three mammal holes were also identified in the easternmost field along the bank of the drainage ditch habitat. All holes were checked for evidence of badger, however were deemed too small and narrow (10-20cm width) to be suitable for badger.

Fox *Vulpes vulpes* were observed during the surveys on four occasions. Three fox cubs were identified during surveys adjacent to these holes, and the camera trap deployed in this location during the initial surveys, confirmed fox usage of these holes. Fox hair was also identified caught on barbed wire fencing within the proposed development site during the surveys in 2025, and a fox was captured by a camera trap in 2025 walking adjacent to, but not using, the mammal holes within the central hedgerow on site. Fox hair is distinguished from badger hair by its texture and colouration.

Badgers, and their breeding and resting places, are protected under the Wildlife Acts. Due to their stable Irish populations, they are classified as “Least Concern” in terms of conservation (Marnell *et al.*, 2019). The local badger populations are valued to be of local importance (higher value), as there is suitable habitat within the proposed development and its vicinity, and the species is present in the NBDC desk study search records within *c.* 2km of the proposed development site.

Bats

Bats, and their breeding and resting places, are protected under the Wildlife Acts. All bat species are also listed on Annex IV of the EU Habitats Directive (with the lesser horseshoe bat also listed on Annex II) and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011.

The NBDC holds records for the following bat species within *c.* 2km of the proposed development site: brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and Leisler’s bat *Nyctalus leisleri.*

- Brown long-eared bat *Plecotus auritus*, one record exist *c.* 700m west of the proposed development, from 2005;
- Common pipistrelle *Pipistrellus pipistrellus*, three records, with the most recent record located *c.* 1.1km west of the proposed development, from 2011;
- Lesser noctule Nyctalus leisleri, one record, with the nearest and most recent record located *c.* 800m northeast of the proposed development, from 2007; and,
- Soprano pipistrelle *Pipistrellus pygmaeus*, three records from *c.* 1.1km west of the proposed development from 2011.

The Bat Conservation Ireland database which holds records of recorded bat roosts returned two known bat roosts were returned from the Bat Conservation Ireland’s roost

database[29]. They are located *c.* 200m north-east and *c.* 650m south-east of the proposed development.

The linear habitat on the boundaries of the lands provides good commuting and foraging routes for bats within the area and their level of suitability is valued 'High' as per the Bat Conservation Trust guidelines[19]. The treelines, hedgerows and watercourses along the site boundaries connect to treelines and hedgerows in the surrounding area, therefore forming part of a wider ecological network in the locality. The habitats between these linear features are valued 'Low' due to their sparse vegetation which is unlikely to provide many foraging opportunities for most bats.

The review of records held by Bat Conservation Ireland returned 48 roosts within c. 10km of the proposed development site. The closest roost to the site was a brown long-eared bat roost located *c.* 700m west, in Saggart Village. The next two nearest roost records were located in Rathcoole, both *c.* 2.9km west, and recorded as unidentified bat species. The remaining records were all over 3km from the proposed development site. The three roosts identified within 3km of the proposed development site are within the Core Sustenance Zone (CSZ) of Irish bat species[30], and therefore could use the proposed development site as foraging and commuting habitat.

There were no bat roosts identified in the buildings within the proposed development site during surveys carried out in 2020, 2023, 2024 and 2025. The farm sheds and buildings were deemed to have low potential for roosting bats due to their dilapidated nature, leaving them open and exposed, and susceptible to fluctuations in temperature. Sixteen trees within the proposed development site were also deemed to have low potential for roosting bats, due to the presence of potential roosting features including; knot holes, transverse snaps, dense ivy stems and branch fractures (Figure 5.6).

The proposed development site is largely unlit, aside from dim light spill on the northern boundary and in the southeastern corner of the site from the neighbouring residential estates. Otherwise, much of the site is unlit which increases the suitability of the linear features for any foraging and commuting bats.

The habitat within the lands provides good commuting and foraging routes for bats using the wider environs and its level of suitability is valued 'Moderate' as per the Bat Conservation Trust (BCT) guidelines[19]. The treelines along the boundary of the site follow linear routes which are connected to mature treelines in the surrounding area.

Sixteen no. trees with potential roost features (PRFs) were identified within the subject lands during the ground-level tree assessment on the 4th April 2023, and the 7th April 2025. The trees noted to contain PRFs are situated along the central hedgerow, eastern treeline and southern treelines (see Figure 5-8 for locations). These trees were assessed to be of 'Low' potential for roosting bats, and all PRFs identified were

[29] Bat Conservation Ireland roost database. Available at: www.batconservationireland.org Accessed on: 18th May 2022.
[30] *Core Sustenance Zones Determining zone size,* Bat Conservation Ireland, 2016.

assessed to be of PRF_I suitability (i.e. only suitable for individual bats or very small numbers of bats). As no evidence of roosting bats was recorded on site, a Regulation 54 derogation licence is not required before the removal of the trees containing these PRFs.

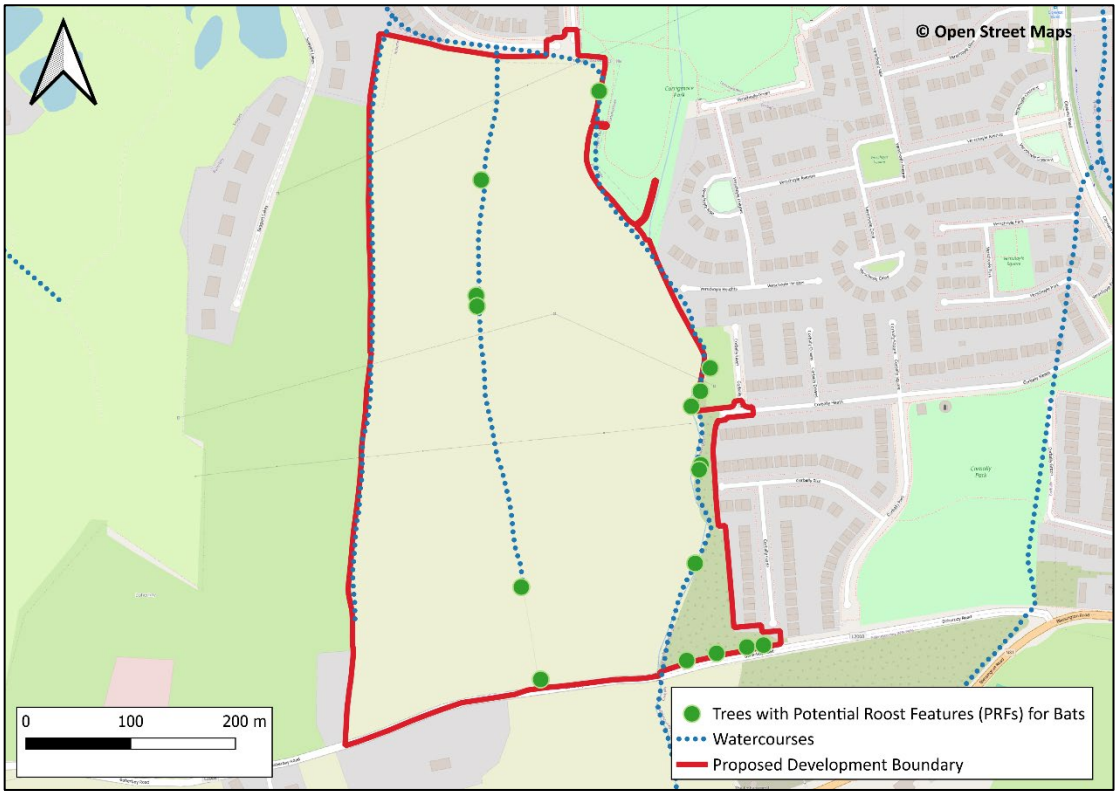


Figure 5-8: Trees with potential roost features for roosting bats within the proposed development site

The bat activity surveys carried out within the lands in June 2020 recorded five bat species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, Leisler's bat *Nyctalus leisleri*, and *Myotis* species[31], foraging and/or commuting within the proposed development site. Common pipistrelle had the highest number of calls recorded, followed by soprano pipistrelle and Leisler's bat in 2020. Follow-up bat activity surveys conducted in June and July 2023 (Figure 5-9), recorded the same species composition as in 2020. Bat activity surveys conducted in June and July 2024 (Figure 5-10), recorded the same species composition as in 2020, with the exception of brown-long eared bat, which was not recorded during the 2024 survey period. Leisler's bat was most frequently recorded in 2023 and 2024, closely followed by common pipistrelle, with considerably less

[31] Calls identified as belonging to species of the genus *Myotis* were recorded on automated detectors. Species of the genus *Myotis* which have been recorded in Ireland comprise Daubenton's bat *Myotis daubentonii*, whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandtii* (vagrant), and Natterer's bat *Myotis nattereri*. These species tend to exhibit similar call sonograms, which are often very difficult to differentiate with any accuracy. For this reason, these species have been assigned to genus level only.

activity recorded for soprano pipistrelle, *Myotis* sp. and brown long-eared bat. In 2025, Leisler's bat was most frequently recorded foraging and commuting within the proposed development site, with the majority of activity recorded around the central hedgerow on the site (Figure 5-11). Common pipistrelle and brown long-eared bats were less frequently recorded using the site. Soprano pipistrelle and *Myotis* sp. were not recorded during the 2025 bat activity survey.

Bat activity overall was at a moderate level, with the central hedgerow and the eastern most hedgerow/treeline exhibiting the highest levels of activity across the species identified. This is most likely due to the high suitability of these linear features including the Corbally and Cooldown streams for foraging and/commuting, and they are largely unlit, and connect the lands to semi-natural habitats within the surrounding landscape. Surveyors followed the linear features (i.e. treelines, hedgerows and watercourses) in the lands.

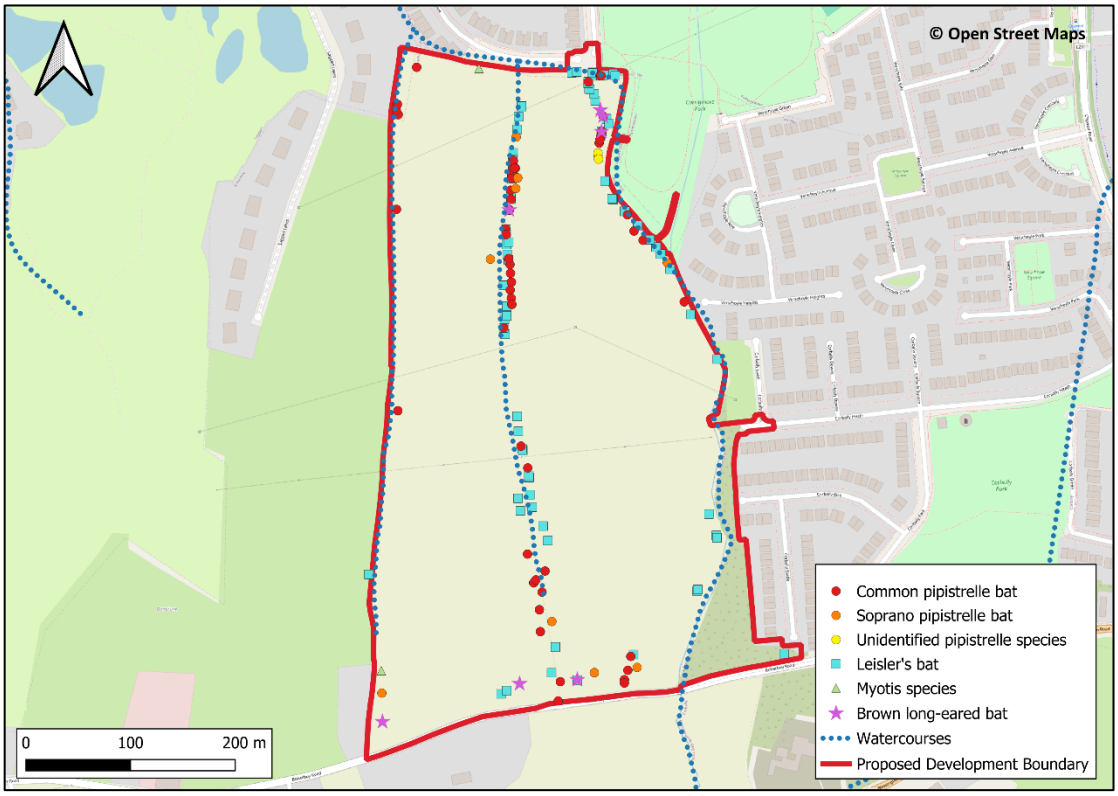


Figure 5-9: Bat species and locations of calls identified during bat activity surveys in 2023.

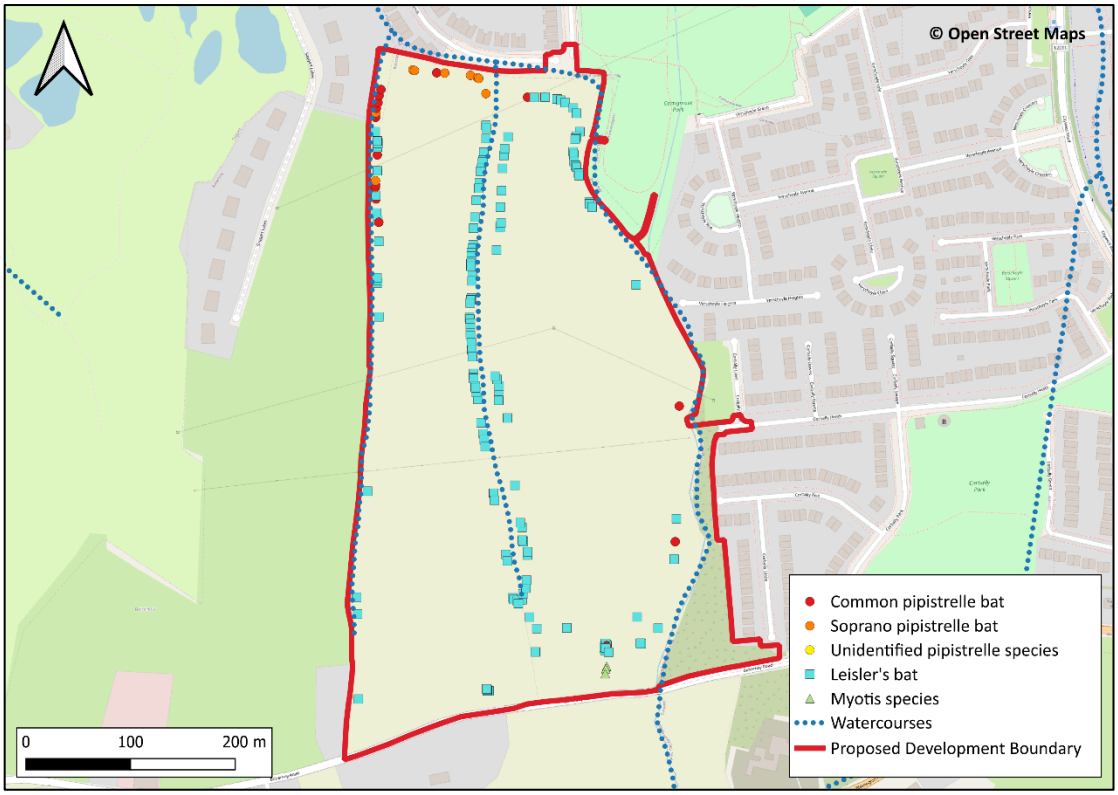


Figure 5-10: Bat species and locations of calls identified during bat activity surveys in 2024.

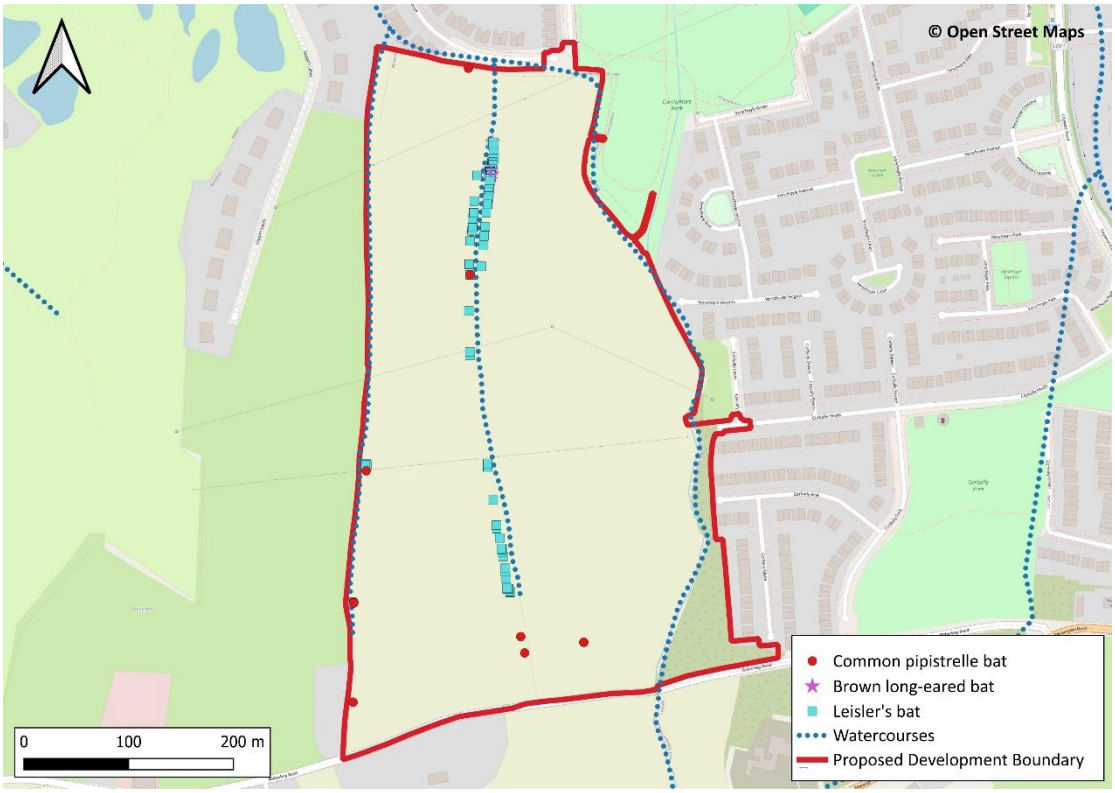


Figure 5-11: Bat species and locations of calls identified during bat activity surveys in 2025.

The bat species recorded during the surveys and returned in the NBDC data search are all common species and of "Least concern" (Marnell *et al*., 2019). Due to the suitable commuting and/or foraging habitat within and surrounding the proposed development, the moderate levels of activity from common and widespread species (i.e. species of least concern), the local bat populations are valued as being of local importance (higher value).

Small Non-Volant Terrestrial Mammals

Small mammals, hedgehog *Erinaceus europaeus*, Irish hare *Lepus timidus hibernicus*, Irish stoat *Mustela erminea hibernica*, pine marten *Martes martes*, pygmy shrew *Sorex minutus* and red squirrel *Sciurus vulgaris* are protected under the Wildlife Acts. Pine marten *Martes martes* are also listed on Annex V of the EU Habitats Directive and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011. The NBDC database search returned one record of pygmy shrew, three records of red deer, five records of red squirrel, sixteen records of hedgehog, three records of Irish hare, and two records of pine marten within *c.* 2km of the proposed development site. The nearest and most recent record to the proposed development for pine marten is *c.* 1km to the south, recorded in 2006. Irish hare was most recently recorded in 2017, *c.* 1km northeast of the lands. The closest and most recent record for red squirrel is *c.* 1.5km east of the proposed development, dating from 2023. The closest record to the proposed development site for pygmy shrew was *c.* 2km from 1969 and *c.* 1.4km to the south for red deer, while the closest record for hedgehog is located *c.* 800m northwest, dating from 2020.

A hedgehog was identified within the proposed development during bat activity surveys carried out in September 2020. No evidence or sightings of the other aforementioned species were identified within the proposed development site during surveys. Fox *Vulpes vulpes* and rabbit *Oryctolagus cuniculus* have also been identified using within the proposed development site during surveys. However, neither fox or rabbit are protected species within Ireland.

Red squirrels are more commonly found within mixed woodlands and/or coniferous woodlands due to a more steady food source year round (Lawton *et al.*, 2020); however, they can also be found within deciduous woodlands, specifically where oak *Quercus* sp. and/or hazel *Corylus avellana* tree species are present as red squirrel are known to forage acorns and hazelnuts. Pine martens have similar habitat preferences to red squirrels, and generally avoid open un-covered habitat types[32], therefore the proposed development has limited habitat suitability for these species. Pygmy shrews, hedgehogs and Irish stoat are found in a range of habitats; however, they are predominantly present in habitats with a rich ground cover, and as such the woodland, scrub and dry meadows and grassy verges habitats within the site are considered suitable for these species. In addition, the dense hedgerows and drainage ditches

[32] *Pine Marten, Conserve Ireland*. Accessed here: https://www.conserveireland.com/mammals/pine_marten

present would also provide cover and commuting corridors for these species. Irish hare is also found in a range of habitats, from coastal dunes to mountain tops, and densities vary from year to year and habitat to habitat[33]. Red deer are typically found in the uplands where they feed on heather and dwarf shrubs, they can also be found in lowland grassland and woodland habitats during harsh weather conditions[34].

All small mammal species returned in the NBDC search are of "Least Concern" in terms of conservation status (Marnell *et al.,* 2019). They are widely distributed throughout Ireland. Although the habitats onsite do not present ideal habitat for breeding small mammals, they may be potentially used by commuting and foraging small mammals. The local small mammal populations are valued to be of local importance (higher value).

Non-native Invasive Terrestrial Mammals

With regards to records for invasive non-native mammal species within *c.* 2km of the proposed development, the NBDC database search returned records for grey squirrel *Sciurus carolinensis*, which is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended). Grey squirrel was not recorded on site during ecological surveys. The nearest and most recent record is from *c.* 1.2km of the proposed development site, from 2007. Other invasive non-native species returned in the NBDC data search included rabbit *Oryctolagus cuniculus*. This species was recorded along field margins of both the eastern and western fields throughout the ecological surveys in 2020, 2021 and 2023, and were noted entering small holes along the banks of the Coldwater Stream. This species is listed as a 'medium impact' species, from the Invasive Species in Ireland prioritisation risk assessment. The nearest record held by the NBDC database is located *c*. 600m north-east of the proposed development. Rabbit and sika deer *Cervus nippon* are currently not listed on the Third Schedule but are regarded as invasive by the NBDC. Two sika deer were recorded within the proposed development site during the first breeding bird survey in June 2020. Records of 'high impact' Brown rat *Rattus norvegicus*, and house mouse *Mus musculus,* were also returned from the NBDC search. These species were not identified during surveys within the proposed development site.

Ecological evaluations are not applicable with non-native invasive species considering their invasive non-native status.

Birds

All wild birds, and their nests and eggs, are protected under the Wildlife Acts. Some bird species are also listed on Annex I of the EU Birds Directive. The NBDC database holds records for 108 bird species which are known to occur within c. 2km of the

[33] *Species Profile: Irish Hare, Vincent Wildlife Trust Ireland*. Accessed here: https://www.vincentwildlife.ie/species/irish-hare
[34] Red Deer, The Irish Deer Society. Accessed here: https://www.irishdeersociety.ie/red-deer/

proposed development site. Of these species, 30 are Special Conservation Interest (SCI) species of European sites, 9 are listed under Annex I of the Birds Directive, 14 are Red-listed (of High Conservation Concern) and 31 Amber-listed (of Medium Conservation Concern) on the Birds of Conservation Concern of Ireland 2020-2026[35] list. Species listed under the Birds Directive or in the Birds of Conservation Concern of Ireland 4: 2020-2026 are presented in a table in Appendix 5.2.

Breeding Birds

A range of common bird species were noted using the site or lands immediately adjacent to it for foraging and breeding purposes during the breeding bird surveys undertaken in June 2020, May/June 2021, spring/summer 2023 and 2024 (see Figure 5-12 and Figure 5-13). These included blackbird *Turdus merula*, blackcap *Sylvia atricapilla*, blue tit *Cyanistes caeruleus*, bullfinch *pyrrhula pyrrhula*, collared dove *Streptopelia decaocto*, coal tit *Periparus ater*, common chaffinch *Fringilla coelebs*, common chiffchaff *Phylloscopus collybita*, common linnet *Carduelis cannabina*, common pheasant *Phasianus colchicus,* dunnock *Prunella modularis*, Eurasian bullfinch *Pyrrhula pyrrhula,* Eurasian magpie *Pica pica*, Eurasian wren *Troglodytes troglodytes,* European goldfinch *Carduelis carduelis*, European greenfinch *Chloris chloris,* European herring gull *Larus argentatus*, European robin *Erithacus rubecula*, goldcrest *Regulus regulus*, great tit *Parus major*, grey wagtail *Motacilla cinerea*, hooded crow *Corvus cornix*, common house martin *Delichon urbicum*, common house sparrow *Passer domesticus*, jackdaw *Corvus monedula*, lesser black-backed gull *Larus fuscus*, lesser redpoll *Carduelis flammea cabaret*, long-tailed tit *Aegithalos caudatus*, mallard *Anas platyrhynchos*, mistle thrush *Turdus viscivorus*, reed bunting *Emberiza schoeniclus*, rook *Corvus frugilegus*, snipe *Gallinago gallinago*, song thrush *Turdus philomelos,* starling *Sturnus vulgaris*, willow warbler *Phylloscopus trochilus* and woodpigeon *Columba palumbus*. In addition to these species, the following species were observed flying across the site including; barn swallow *Hirundo rustica*, black-headed gull *Chroicocephalus ridibundus*, common buzzard *Buteo buteo*, sparrowhawk *Accipiter nisus* and swift *Apus apus*.

Of these species, three are Red listed (of High Conservation Concern) (grey wagtail, snipe and swift) and 12 are Amber listed (of Moderate Conservation Concern) (barn swallow, black-headed gull, common linnet, European greenfinch, European herring gull, goldcrest, house martin, house sparrow, lesser black-backed gull, mallard, starling and willow warbler). No species recorded is listed on Annex I of the EU Birds Directive, however, four species are listed as SCIs (black-headed gull, herring gull, lesser black-backed gull and mallard).

Table 5-6 below provides a summary of the findings of the breeding bird surveys with respect to those species which are of conservation concern.

[35] Gilbert, G., Stanbury, A. & Lewis, L. (2021) Birds of Conservation Concern in Ireland 4: 2020-2026. Irish Birds 43:1-22.

Table 5-6 Birds of Conservation Concern Recorded during the Breeding Bird Surveys in 2023 and 2024

Common name / Latin name / BTO	Activity in the Proposed Development Boundary	Conservation Importance		
		BoCCI (breeding)	Annex I	SCI[1]
Black-headed gull *Chroicocephalus ridibundus* (BH)	Observed once in 2023 flying over the site	Amber	No	Yes
Goldcrest *Regulus regulus* (GC)	Observed across the 2023 (15 records of a total of 19 individuals, 1 confirmed breeding) and 2024 survey season (4 records of a total of 4 individuals).	Amber	No	No
Greenfinch *Chloris chloris* (GR)	Observed once during the 2023 survey season flying over the site.	Amber	No	No
Grey wagtail *Motacilla cinerea* (GL)	Single individual observed in 2023 and 2025 foraging on recolonising bare ground habitat at the south of the site. Two individuals observed in 2024.	Red	No	No
Herring gull *Larus argentatus* (HG)	Six records of a total of 16 individuals flying over or foraging on the site in 2023. Not observed in 2024.	Amber	No	Yes
House martin *Delichon urbicum* (HM)	1 probable breeding individual observed in 2023. Not observed in 2024.	Amber	No	No
House sparrow *Passer domesticus* (HS)	18 records of a total of 67 individuals in suitable nesting habitat or flying over in 2023. 6 records of a total of 10 individuals observed in 2024 singing or in suitable nesting habitat.	Amber	No	No
Lesser black-backed gull *Larus fuscus* (LB)	Five records of a total of five individuals flying over the proposed development site in 2023. Four records of a total of four individuals flying	Amber	No	Yes

Common name / Latin name / BTO	Activity in the Proposed Development Boundary	Conservation Importance		
		BoCCI (breeding)	Annex I	SCI[1]
	over the proposed development site in 2024.			
Linnet *Linnaria cannabina* (LI)	Four records of a total of six individuals flying over the site in 2023. Not recorded in 2024.	Amber	No	No
Mallard *Anas platyrhynchos* (MA)	Two pairs were observed in 2023, and one pair observed in 2024 in the marsh, wet grassland mosaic and near the Corbally stream.	Amber	No	Yes – but not of any SPAs in the immediate vicinity of the proposed Project
Snipe *Gallinago gallinago* (SN)	Four records of a total of twelve individuals were recorded during the 2023 survey season. One record of three individuals was recorded on the site in 2024.	Red	No	No
Starling *Sturnus vulgaris* (SG)	33 Records of between 1 and 40 individuals recorded during the 2023 season. Eight individuals were recorded as confirmed breeders. 20 Records of between 1 and 120 individuals recorded during the 2024 season. Two individuals were recorded as confirmed breeders	Amber	No	No
Swallow *Hirundo rustica* (SL)	Five records of a total of 11 individuals recorded flying over or within permanent territory in the proposed development site in 2023. Three records of a total of four individuals recorded flying over the proposed development site in 2024.	Amber	No	No
Swift *Apus apus* (SI)	A single record of three individuals flying over in 2024.	Red	No	No

Common name / Latin name / BTO	Activity in the Proposed Development Boundary	Conservation Importance		
		BoCCI (breeding)	Annex I	SCI[1]
Willow warbler *Phylloscopus trochilus* (WW)	Four records of single individuals recorded in 2023 only.	Amber	No	No

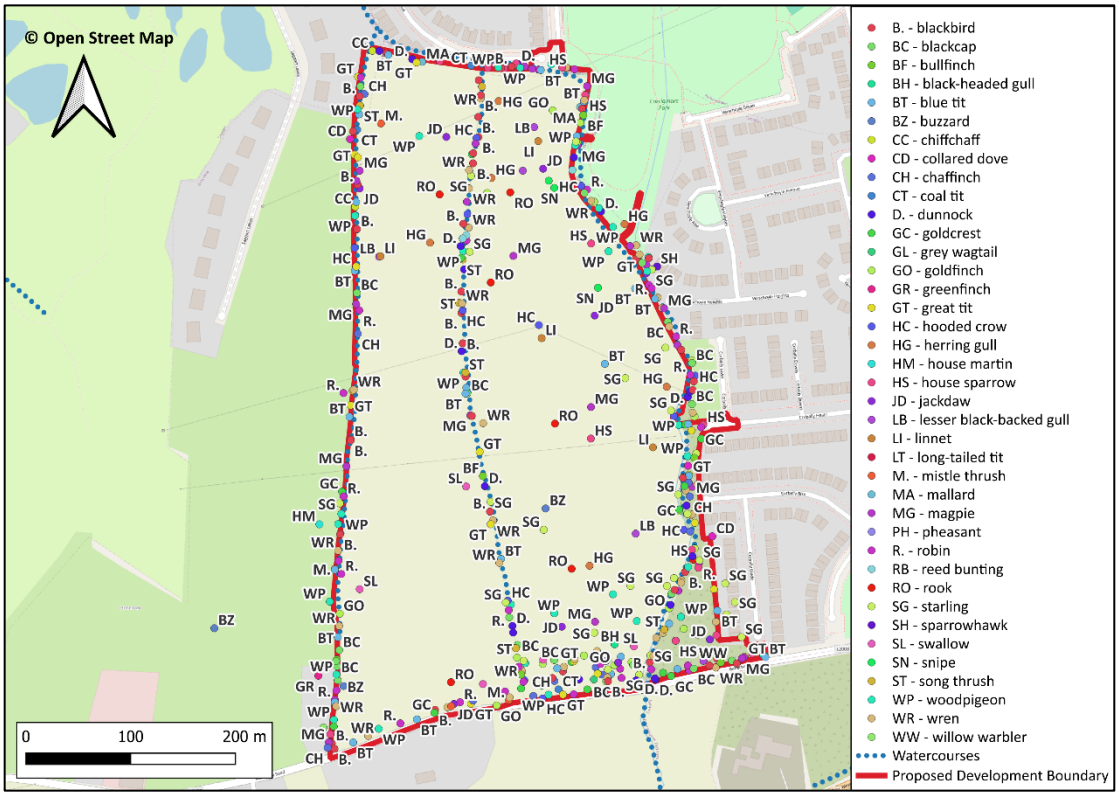


Figure 5-12: Records of birds identified during breeding birds surveys within the site in 2023.

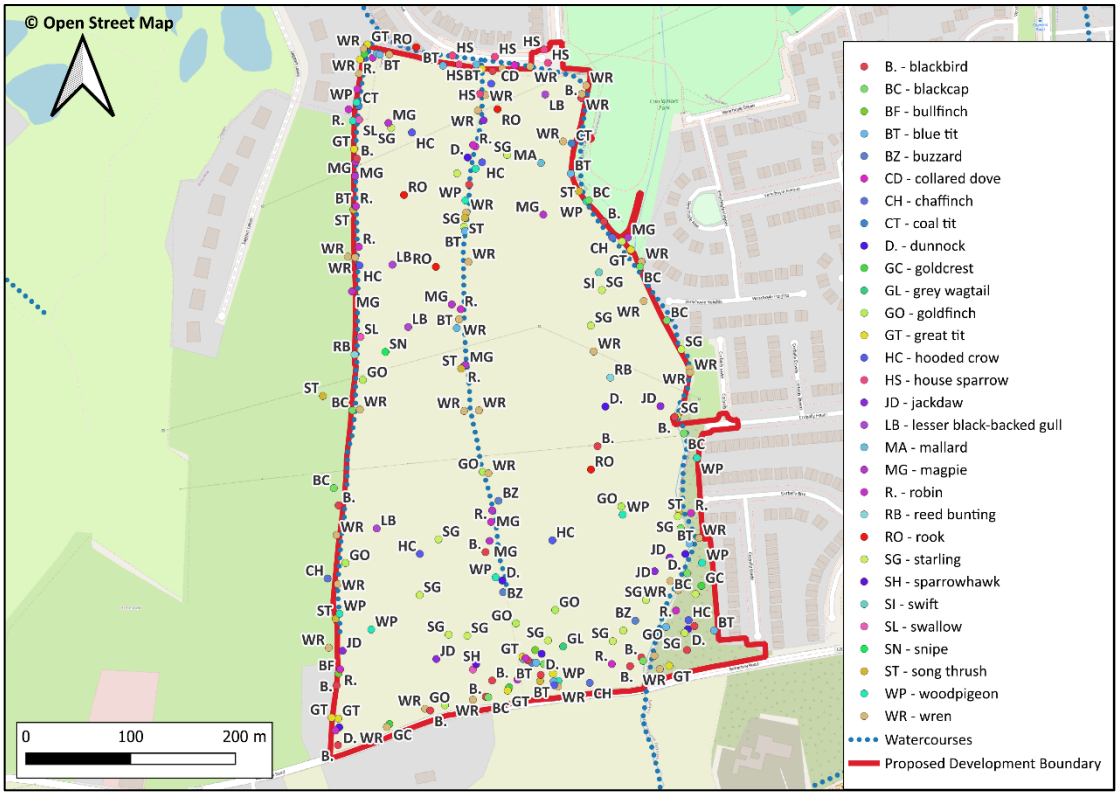


Figure 5-13: Records of birds identified during breeding birds surveys within the site in 2024.

Grey wagtail and snipe are red-listed (*i.e.* of high conservation concern) due to declines in breeding populations. Grey wagtail was noted in the south of the site adjacent to the barns during the June 2020 breeding survey and again in the April 2023 and April 2024 surveys. Grey wagtail as noted in the same area in the south of the site during the Habitat Verification and Multi-Disciplinary survey in April 2025. Whilst snipe was identified in wet grassland and marsh habitats in the eastern field in April 2023 and in lower numbers in May 2023, it was not recorded during the June 2023 survey. Three snipe were recorded during the 2024 surveys. While breeding bird surveys were not completed for the 2025 season, five snipe were noted within the marsh habitat in the eastern field, and two snipe were noted in the western field in the agricultural grassland/wet grassland mosaic during the Habitat Verification and Multi-Disciplinary survey in April 2025.

Nine records of grey wagtail within *c.* 2km of the proposed development site were returned from the NBDC database, the most recent the most recent of which is from 2017. The NBDC desktop search returned two records of meadow pipit within *c.* 2km of the proposed development site, both with the most recent record from 2011. Swift was recorded flying over the proposed development site the June 2024 survey. A record of this species were returned from the NBDC search, however it occurs at a poor spatial resolution (10km), so it is unknown if it lies within c.2km of the proposed development site.. None of the red listed species recorded are considered or identified to be nesting within the proposed development site. Grey wagtail typically nests close to fast flowing rivers beneath man-made structures on ledges of bridges or culverts, or

amongst tree roots[36]. Swifts nest in crevices in the upper reaches of buildings with stone and brickwork, there are no such suitable buildings in the proposed development site. Whilst not nesting within the proposed development site, the surrounding habitat has potential to support these red-listed species.

Snipe are a ground nesting species which typically breed on wet boggy habitat and the edge of wet grassland[37] and were recorded in this habitat during the breeding bird surveys. However, no nest sites were encountered during the breeding bird surveys in 2023. Although, a patchy mosaic of wet grassland and marsh occurs in the eastern field, disturbance from cattle would likely deter nesting activity due to trampling. Further, no signs of nesting behaviour were recorded during the surveys in 2023.

Breeding birds use various habitats, including trees, structures and scrub, for nesting. The presence of several bird species with territories within the proposed development site indicates that it is likely to be used for breeding by a number of species. No nests were observed within the proposed development site during the surveys; however, they are usually camouflaged and therefore well-hidden and so it is acknowledged that they could have gone unnoticed despite the survey effort.

There are a number of habitats within the proposed development site that are suitable for breeding birds to nest in, including trees, barns, hedgerows and scrub. The proposed development site is likely to encompass and/or form part of the breeding territories of a number of bird species recorded during the surveys. Breeding behaviour of the majority of species was observed within the proposed development site, predominately along or close to hedgerows and the immature woodland areas within the site. Barn swallows were observed nesting in the building in the southwestern section of the proposed development site. A pair of buzzards were observed on surveys in 2020, 2023 and 2024 soaring and calling above the western field in proposed development site. Whilst a nest was not identified, it is likely they are nesting nearby in the local area.

Although, there were a number of buildings and barns within the site, there were no buildings suitable for barn owls, due to lack of potential nest places within the barns present i.e. a concave or level surface or cavity, that is elevated and well hidden. No evidence of barn owls was identified within the proposed development site, with the most recent NBDC database record within c. 2km west of the proposed development returned from 2023.

Given the abundance of green listed species recorded, the small numbers of amber or red listed species and the abundance of suitable surrounding habitat; the proposed development site is of local importance (higher value) for local breeding bird populations.

[36] Grey Wagtail (*Motacilla cinerea*). Birds in Cheshire and Wirral, A breeding and wintering atlas. Accessed here: http://www.cheshireandwirralbirdatlas.org/species/grey-wagtail-breeding.htm

[37] Snipe (*Gallinago gallinago*). BirdWatch Ireland. Accessed here: https://birdwatchireland.ie/birds/snipe/

Wintering birds

Wintering bird surveys were undertaken in the 2023/2024 season from November to March as part of the ecological surveys to inform this report. Wintering bird surveys were also undertaken in September and October 2025 as part of the ecological surveys to inform this report. Wintering bird surveys to inform a previous planning application were undertake in 2020 and 2021. The results of the surveys conducted in 2025, and 2023/2024 largely reflect observations from surveys in 2020 and 2021, with little wintering bird activity recorded on site. The only wintering bird species recorded on the site included common snipe *Gallinago gallinago*, black-headed gull *Chroicocephalus ridibundus*, herring gull *Larus argentatus*, lesser black-backed gull *Larus fuscus,* great black-backed gull *Larus marinus*, common gull *Larus canus,* little egret *Egretta garzetta*, mallard *Anas platyrhynchos,* and redwing *Turdus iliacus*. Common buzzard was observed landing within the site while a sparrowhawk was recorded on one occasion perched on the treeline along the eastern boundary of the site.

The results of the 2023/2024, and 2025 winter bird surveys are illustrated below in Figure 5-14, Figure 5-15, Figure 5-16 and Figure 5-17.

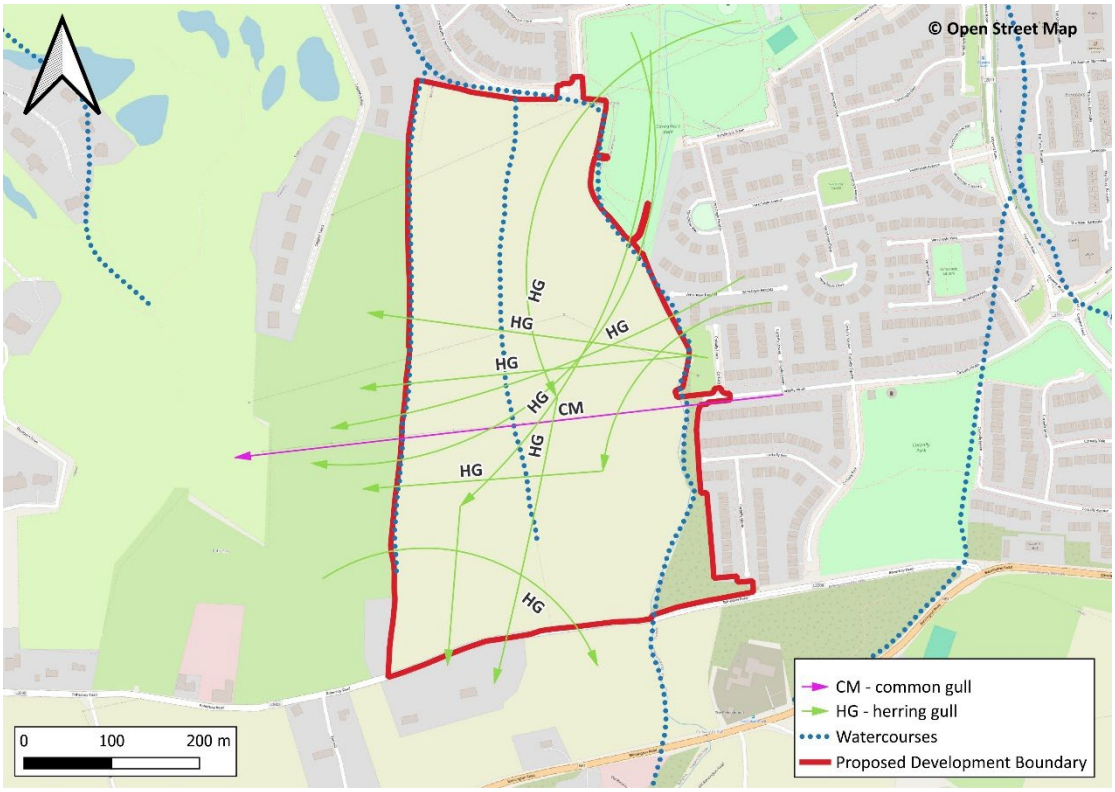


Figure 5-14 Records of flightlines of birds identified during wintering birds surveys within the site in September and October 2025.

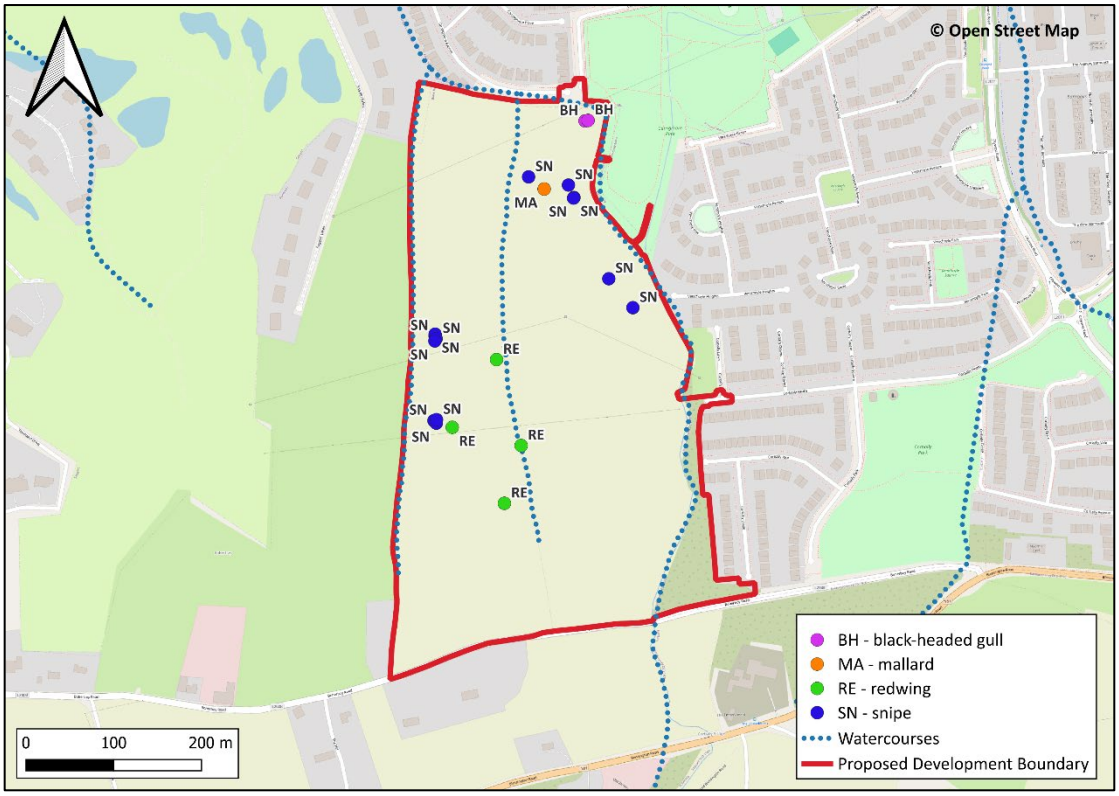


Figure 5-15 : Records of birds identified during wintering birds surveys (excluding flightlines) within the site between November 2023 and March 2024.

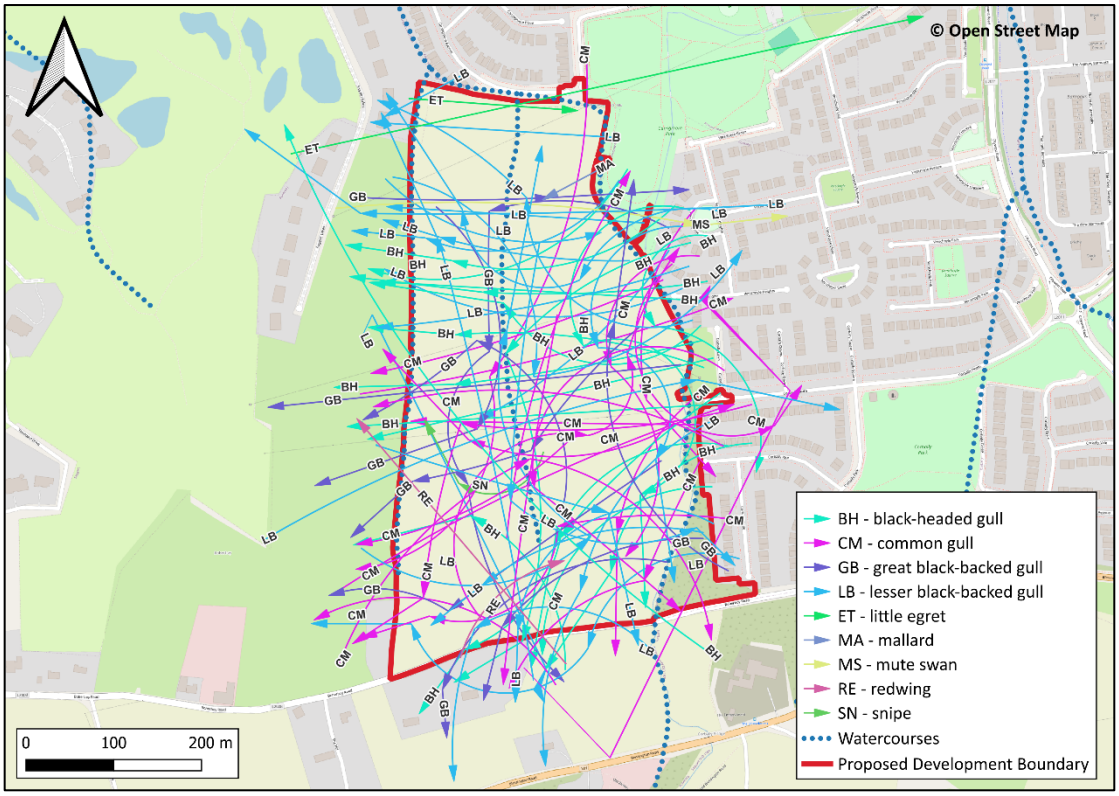


Figure 5-16: Records of flightlines of birds identified during wintering bird surveys (excluding herring gull) within the site between November 2023 and March 2024.

Figure 5-17 : Records of herring gull identified during wintering bird surveys within the site between November 2023 and March 2024.

The desk study records from the NBDC database search include 20 species of wintering waterfowl, gull and wader species within *c.* 2km of the proposed development site. These records are present in Appendix II.

Table 5-7 below provides a summary of the findings of the winter bird surveys with respect to those species which are of highest conservation concern, and were recorded within winter bird survey sites:

- Special Conservation Interests (SCIs), for a wintering population, of nearby SPAs
- Species listed under Annex I of the Birds Directive (2008/144/EC)
- Red, Amber and Green BoCCI species listed for their wintering populations

Table 5-7 Details of wintering bird species found within the proposed development site

Common name/Latin name/BoCCI Code	Distribution in the study area	Peak count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
Black-headed gull (BH) *Chroicocephalus ridibundus*	Observed flying over multiple areas of the site during three visits, landed during two survey visits.	No black-headed gull recorded in the 2020 or 2021 surveys. 1 bird observed in a flooded area in the north of the lands in December 2023 and January 2024. No birds observed in 2025.	Amber (B/W)	-	✓
Herring gull (HG) *Larus argentatus*	Observed flying over multiple areas of the site during all survey visit, did not land.	4 birds observed flying over the centre of the lands in March 2021 and a peak of 2 birds in the 2020 surveys. 8 birds observed flying over the south of the site in February 2024. 5 birds observed flying over the site in October 2025	Amber (B/W)	-	✓
Little egret (ET) *Egretta garzetta*	Observed flying over the site during one visit, landed on the site during one visit.	No little egret recorded in the 2020 or 2021 surveys. 2 birds observed a flooded area in the north of the lands in	Green (B/W)	✓	-

Common name/Latin name/BoCCI Code	Distribution in the study area	Peak count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
		December 2023 and flying over the north of the site in February 2024. No birds observed in 2025.			
Lesser black-backed gull (LB) *Larus fuscus*	Observed flying over multiple areas of the site during four visits, did not land.	A peak of 1 bird flying over in the 2020 and 2021 surveys. 3 birds observed flying over in November 2023. No birds observed in 2025.	Amber (B/W)	-	✓
Snipe (SN) *Gallinago gallinago*	Birds were flushed from an area of wet grassland in the north of the site during all five survey visits during the 2023/2024 surveys.	A peak of 2 no. birds were flushed from wet grassland in the March 2020 survey. 13 birds in the north of the site during January 2024 visit. No birds observed in the 2025 winter bird season.	Red (B/W)	-	-
Mallard (MA) *Anas platyrhynchos*	Observed in a flooded area in the north of the site during two visits.	A pair recorded in the eastern field in March 2021. 2 birds observed flying over during March 2024 visit. No birds observed in 2025.	Amber (B/W)	-	✓
Common gull (CM) *Larus canus*	Observed flying over multiple areas of the site during four visits, did not land.	1 bird observed flying in the south of the lands in February 2020. 3 birds observed flying over during March 2024 visit. 1 bird observed flying over the site in September 2025	Amber (B/W)	-	✓
Great black-backed gull (GB) *Larus marinus*	Observed flying over multiple areas of the site during four visits.	2 birds observed flying over during February 2020 and in the March 2024 visits.	Green (B/W)	-	✓

Common name/Latin name/BoCCI Code	Distribution in the study area	Peak count/Site/Date	Conservation Importance		
			BoCCI (Breeding)	Annex I	SCI
		No birds observed in 2025.			

During wintering bird surveys carried out in February and March 2020 and 2021, two SCI species from nearby European sites were identified within the lands: herring gull and lesser black-backed gull. Both of these species were identified flying over the site and did not land.

During wintering bird surveys carried out from November 2023 to March 2024, six species listed as SCIs under the Birds Directive (2009/147) were identified within the lands including:

- lesser black-backed gull, an SCI species of Poulaphouca Reservoir SPA located *c.* 11km south of the proposed development site;
- black-headed gull, an SCI species of South Dublin Bay and River Tolka SPA located *c.* 16km east of the proposed development;
- herring gull, an SCI of North-West Irish Sea SPA located *c.* 20km east;
- common gull, an SCI species of North-West Irish Sea SPA located *c.* 20km east;
- great black-backed gull, an SCI species of North-West Irish Sea SPA located *c*. 20km east, and;
- mallard, an SCI species of Dundalk Bay SPA, *c.* 66km northeast of the proposed development.

Herring gull, lesser black-backed gull, great black-backed gull and common gull were identified flying over the site and did not land, and therefore, the proposed development site is not used by these SCI species from nearby European sites.

Both black-headed gull and mallard were observed on the site during one survey visit each. There is suitable habitat for mallard and black-headed gull in a flooded area within the site to the north of the eastern field which is used by small numbers of both species. There is also suitable habitat other species of gull (i.e. herring gull and lesser black-backed gull) for roosting and foraging in this flooded area. The site is not suitable however, for light-bellied Brent geese *Branta bernicla hrota* and wintering waders which regularly use Dublin's amenity parks and sports grounds for foraging. The nearest known light-bellied Brent goose site is *c.* 6.1km north-east the proposed development site at Tymon Park (Scott Cawley Ltd., 2017). Given that there is no suitable foraging habitat, i.e. a large area of open short-sward grassland onsite, the proposed development site is unsuitable for light-bellied Brent goose, and/or other SCI wintering bird species that use similar habitat for foraging within County Dublin. Greylag goose is a SCI species of the Poulaphouca Reservoir SPA located *c.* 11.3km

southwest of the proposed development, and was not identified within the proposed development during wintering bird surveys. The proposed development is not on any known migrating routes of wintering bird species.

The wet grassland and marsh habitat in the north of the eastern field provides some suitable habitat for wading species such as snipe, which was identified in the north of the site during surveys. There is limited habitat for waterfowl species however due to the lack of open waterbodies in the site.

The treelines and scrub offer suitable foraging habitat and shelter for smaller overwintering species such as passerines for example redwings *Turdus iliacus* and fieldfare *Turdus pilaris,* the former species which was identified within the proposed development site.

Due to the presence of a small number of wintering bird species, and limited suitable habitat on site, the local wintering bird population are valued to be of local importance (higher value).

Amphibians and Reptiles

The Wildlife Acts provide protection to Ireland's only reptile species, common lizard, *Zootoca vivipara* and two amphibian species, common frog *Rana temporaria* and smooth newt *Lissotriton vulgaris*. All of these three species are listed as of "Least Concern" in terms of conservation (Marnell *et al*., 2019).

The NBDC database holds five records for common frog *Rana temporaria* within *c.* 2km of the subject lands. The nearest record is from *c.* 1.4km west of the proposed development, and one record of smooth newt, from 2023.

Common frog

Common frogs can be typically found associated with standing water. Open streams recorded within the proposed development site provide potential habitat for this species. Streams on the site are partially shaded by vegetation in places with the Corbally Stream experiencing low flow at the time most recent survey in April 2025. Given the continuous flow present in the Corbally Stream it is unlikely to be utilised by breeding frogs, however the potential stagnant nature of the Cooldown and Coldwater streams provides some limited potential breeding habitat. In addition, a small area of marsh, in the northern part of the eastern field, is wet all year round and partly floods due to overflow from the Corbally Stream. Therefore, the proposed development site offers small areas of suitable breeding habitat within this area and within the Cooldown and Coldwater streams following periods of heavy rainfall.

Although no common frogs were observed during the surveys, their presence on site cannot be ruled out, based on availability of potentially suitable habitat within the subject lands and their wider distribution across the local area. West of the proposed development is the Citywest and Hibernian Golf Course. This golf course has multiple pond features, with the closest feature being c. 100m west of the proposed development site. Whilst these areas were not surveyed, it is likely that these ponds

are suitable for amphibians, and individuals could travel between the habitats within and outside of the proposed development site. Considering the presence of suitable habitat for common frog in the proposed development site and in its vicinity, as well as the number of records of common frog in the area, the local common frog populations are valued to be of local importance (higher value).

Smooth newt

No individuals were observed at the time of the survey. The Corbally, Cooldown and Coldwater streams located within the proposed development site are considered less than ideal for breeding smooth newt, considering they are ephemeral in places and unlikely to contain slow-flowing or stagnant water deep enough (0.5-1meter) for a sustained period. However, the presence of suitable dense vegetation in the form of hedgerows, treelines and scrub may provide suitable habitat for hibernation during the winter months. Local smooth newt populations are of local importance (higher value), however, they are not considered to be a key ecological receptor due to lack of suitable habitat, provided that there will be no indirect off-site effects.

Common lizard

There were no records of common lizard in the NBDC database within *c.* 2km of the site. No individuals were observed at the time of the survey, and it is considered unlikely that reptiles are present within the site, as common lizard is typically associated with heath and coastal scrub habitat in Ireland. This species is therefore not considered further.

Local amphibian populations are of local importance (higher value), due to the presence of suitable habitat within the proposed development and in close proximity in the wider environs, and the local records of these species.

Aquatic surveys

The NBDC database search returned no records for protected and/or rare fish species.

White-clawed crayfish and Small Stream Risk Score (SSRS)

The NBDC database search returned one record for freshwater white-clawed crayfish *Austropotamobius pallipes* within *c.* 2km of the proposed development site from 2013. This record was located *c.* 1.2km west of the proposed development, along the Camac River. The record was located *c.* 2.5km upstream of the confluence of the Camac and the Corbally Stream. The proposed development site is therefore hydrologically connected to white-clawed crayfish habitat.

The Corbally Stream within the proposed development provides limited suitable habitat for white-clawed crayfish, with limited rocks present instream, and heavily silted and muddy substratum for the majority of its length within the proposed development site. There is a higher cover of stones at the southern part of the site (sampling site 1), which is more suitable habitat for white-clawed crayfish than elsewhere within the site, as they require a high cover of cobbles and gravel. However, the shallow nature of the

stream (approximately 10-30cm maximum depth), and evidence of cattle poaching and dumping in-stream greatly reduces the suitability of the watercourse for white-clawed crayfish. Furthermore, the Corbally stream is culverted immediately north of the proposed development. The results of the hand-searches confirmed white-clawed crayfish are absent from the Corbally Stream within the proposed development site.

The closest river station to the proposed development is along the Camac River, located *c.* 3km downstream of the site, and has 'moderate' ecological status or potential, however is 'at risk' of not achieving good water quality status. The most recent EPA risk score for the Corbally Stream was 'at risk' from 2021. The results of the SSRS from the Corbally Stream in 2025 indicated that the watercourse within the site is 'at risk', with a low diversity of macroinvertebrates recorded at sampling sites 2 and 3 (Appendix 5.5)**.** There was a higher macroinvertebrate diversity sampled at sampling site 1, with an SSR score indicating that the stream is 'Probably not at risk', indicating that water quality upstream is of better quality. It is likely that nutrient input from the site's agricultural use impacts the change in water quality on site.

It is unlikely that the Corbally, Coldwater and Cooldown Streams within the proposed development would support white-clawed crayfish populations given the survey results from the Corbally Stream, the lack of suitable refugia and poor ecological status of the watercourses on the site.

Nevertheless, as the proposed development is connected hydrologically to white-clawed crayfish habitat and due to the presence of downstream records of the species within *c.* 2km, the white-clawed crayfish is of local importance (higher value) and is included as a KER.

Invertebrates

No rare or protected macro-invertebrate species (according to national red lists) were recorded in the biological water quality samples collected from the Corbally Stream in the SSRS and white-clawed crayfish surveys in July 2023.

The NBDC database returned records for one rare invertebrate: Narrow-bordered Five-spot Burnet *Zygaena lonicerae* which is listed as "Vulnerable".

This species can be found in unimproved, flower-rich, lowland grassland, and is classified as Vulnerable due to a population reduction due to a decline in area of occupancy, extent of occurrence or habitat quality, and a suspected/projected future population reduction. [38]. There is no suitable habitat for this species wothon the proposed development site (i.e. unimproved, flower-rich, lowland grassland), which is dominated by improved agricultural grassland.

[38] Allen, D., O'Donnell, M., Nelson, B., Tyner, A., Bond, K.G.M., Bryant, T., Crory, A., Mellon, C., O'Boyle, J., O'Donnell, E., Rolston, T., Sheppard, R., Strickland, P., Fitzpatrick, U., & Regan, E. (2016) Ireland Red List No. 9: Macro-moths (Lepidoptera). National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

There is no suitable habitat for Annex II species marsh fritillary *Euphydryas aurinia*, Annex II and/or Annex II and V species freshwater pearl mussel *Margaritifera margaritifera* within the proposed development site. The marsh fritillary is typically found associated with damp grasslands containing its larval foodplants devil's-bit-scabious *Succisa pratensis,* which is absent from the proposed development site.

Although majority of the proposed development site is comprised of heavily managed arable crop habitat, the surroundings are still largely of agricultural nature and rough grassland which provide important resources to the local invertebrate populations in a wider setting. The presence of the Corbally Stream provides suitable habitat for aquatic macroinvertebrates. However, the Cooldown and Coldwater streams are unlikely to support a high diversity of macroinvertebrates due to their seasonality. The local invertebrate populations are of local importance (higher value).

5.3.5 Summary of Ecological Evaluation

Table 5-8 and Table 5-9 below summarises the ecological evaluation of all receptors taking into consideration legal protection, conservation status and local abundance, and identifies the Key Ecological Receptors (KERs). Species, habitats and features not qualifying as KERs are not subjected to impact assessment in line with current best practice of assessing the impacts on what are determined to be important ecological or biodiversity features: CIEEM and TII guidelines (CIEEM (2024), and National Roads Authority (2009)).

Table 5-8: Summary of the ecological evaluation of designated sites

Ecological Receptor	Ecological Valuation	KER?
Designated Sites		
Glenasmole Valley SAC	International	**Yes**
Wicklow Mountains SAC	International	**Yes**
South Dublin Bay SAC	International	**Yes**
North Dublin Bay SAC	International	**Yes**
Red Bog, Kildare SAC	International	**Yes**
Rockabill to Dalkey Islands SAC	International	**Yes**
Rye Water Valley/Carton SAC	International	**Yes**
Wicklow Mountains SPA	International	**Yes**
North Bull Island SPA	International	**Yes**
South Dublin Bay and River Tolka Estuary SPA	International	**Yes**
Poulaphouca Reservoir SPA	International	**Yes**
North-west Irish Sea SPA	International	**Yes**
All other European sites	International	No
Lugmore Glen pNHA	National	**Yes**
Slade of Saggart and Crooksling Glen pNHA	National	**Yes**
Dodder Valley pNHA	National	**Yes**
Glenasmole Valley pNHA	National	**Yes**
Grand Canal pNHA	National	**Yes**
Kilteel Wood pNHA	National	**Yes**
Liffey Valley pNHA	National	**Yes**
South Dublin Bay pNHA	National	**Yes**
North Dublin Bay pNHA	National	**Yes**
All other NHA or pNHA sites	National	No

Table 5-9: Summary of the ecological evaluation of habitats and fauna

Ecological Receptor	Ecological Valuation	KER?
Habitats and Flora		
Rare and protected flora	Local importance (higher value)	No
Non-native invasive flora	N/A	-
Buildings and artificial surfaces (BL3)	Local importance (lower value)	No
Recolonising bare ground (ED3)	Local importance (lower value)	No
Improved agricultural grassland (GA1)	Local importance (lower value)	No
Improved amenity grassland (GA2)	Local importance (lower value)	No
Dry meadows and grassy verges (GS2)	Local importance (lower value)	No
Wet grasslands (GS4)	Local importance (higher value)	**Yes**
Marsh (GM1)	Local importance (higher value)	**Yes**
Depositing/lowland rivers (FW2)	Local importance (higher value)	**Yes**
Drainage ditches (FW4) (wet variant)	Local importance (higher value)	**Yes**
Drainage ditches (FW4) (dry variant)	Local importance (lower value)	No
Scrub (WS1)	Local importance (lower value)	**No**
Immature woodland (WS2)	Local importance (higher value)	**Yes**
Hedgerows (WL1) (Townland boundaries only)	County importance	**Yes**
Hedgerows (WL1)	Local importance (higher value)	**Yes**
Treelines (WL2)	Local importance (higher value)	**Yes**
Fauna Species		
Badger	Local importance (higher value)	**Yes**
Otter	County importance	**Yes**
Bats	Local importance (higher value)	**Yes**
Small non-volant terrestrial mammals protected under the Wildlife Acts	Local importance (higher value)	**Yes**
Other mammal species not protected under the Wildlife Acts (fox, rabbit)	Local importance (lower value)	No
Non-native Invasive Terrestrial Mammals	N/A	**-**
Birds	Local importance (higher value)	**Yes**
Wintering birds	Local importance (higher value)	**Yes**
Amphibians	Local importance (higher value)	**Yes**
Reptiles	N/A	**No**
White-clawed crayfish	Local importance (higher value)	**Yes**
Invertebrates listed as Vulnerable, Endangered or Critically Endangered on the relevant Red List	Local importance (higher value)	**No**

5.4 Characteristics of the Proposed Development

Kelland Homes Ltd. and Aderrig 4 Residential Ltd. intend to apply for permission for a Large-scale Residential Development (LRD) at a site located at Boherboy, Saggart, County Dublin. To the immediate north of the site is the Carrigmore residential estate, to the west are agricultural lands and a single dwelling, to the east is the Corbally residential estate and Carrigmore Park while to the south is the Boherboy Road.

The development will consist of 611 no. dwellings, comprised of 306 no. 2, 3, & 4 bed, 2 & 3 storey, detached, semi-detached & terraced houses, 133 no. 1, 2, & 3 bed duplex units in 12 no. 2-3 storey blocks, and 172 no. 1, 2, & 3 bed apartments in 5 no. buildings ranging in height from 4-5 & 5 storeys. The proposed development also includes a 2-storey crèche (c.630m²). A detailed description of the proposed development is included in Chapter 2 of the EIA report.

Access to the development will by via one no. new vehicular access point from the Boherboy Road, along with vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

The proposed development provides for (i) all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, (ii) public open spaces (c. 2.19Ha), (iii) communal open spaces (c. 4,337sq.m), (iv) hard & soft landscaping and boundary treatments, (v) surface car parking, (vi) bicycle parking, (vii) bin & bicycle storage, (viii) public lighting, and (ix), plant (M&E), utility services & ESB sub-stations, all on an overall application site area of c.18.7Hha. In accordance with the South Dublin County Development Plan (2022-2028), an area of c.1.03Ha within the site is reserved as a future school site.

Surface water drainage infrastructure

The surface water drainage design has been carried out in accordance with the Greater Dublin Regional Code of Practice (GDSDS). The internal drainage system has been designed as a completely separate foul and surface water system. The site is to be drained following a SuDS treatment train philosophy and replicating a nature based solution in providing swales, tree-pits, bio-retention, use of open watercourse, over grassland flow, open detention basins, rain garden planters and permeable paving. All runoff is to be slowed down and treated naturally throughout the SuDS process before been attenuated to the site Qbar greenfield rate and out falling the Corbally stream to the east & north and to the Coldwater watercourse to the west. The QBar for the main site west of the Corbally Steam was determined to be 55.0 l/s and 1.3 l/s for the smaller site to the east of the stream. The surface water drainage is divided into 9No. separate catchment areas, each with its own SuDS interception, treatment, attenuation and storage. There is a potential c.1Ha future school site reserved on the lands that does not form part of this application but has been allowed for in the drainage calculations. The surface water drainage infrastructure for the development will collect and treat the

rainfall on the site and convey the runoff via roadside swales, tree pits, bio-retention areas, rain garden planters, open course conveyance swales, pipes, manholes, catchpit manholes and direct the flows via 9No open detention basins and 1No. below ground attenuation system towards vortex flow restricting devices (Hydrobrake or similar) and petrol interceptors before outfalling to the existing on site open watercourses.

Foul water

A new gravity foul sewer is to be constructed to an existing manhole located in Verschoyle Green via the SDCC lands to the NE of the site. c.25% of the site foul drainage will be pumped from a new pumping station in the NE corner into the proposed new gravity sewer while the remaining 75% flows by gravity in the same main. The 10 no.units on the “east” Corbally site will drain foul by gravity into the existing sewer in Corbally Rise. Uisce Eireann have issued a Confirmation of Feasibility for this site noting the proposal was “feasible subject to upgrades”. The minimum public sewer diameter is to be 225mm. The proposed foul pumping station is to be in accordance with the Irish Water Code of Practice for Wastewater Infrastructure 2017 – Part 5 – Pumping Stations. This network will then carry the foul water to the Ringsend Wastewater Treatment Plant (WWTP) prior to its discharge into the Liffey Estuary/Dublin Bay.

Construction Programme

The duration of construction activities is expected to last 5 years (+/-), completed in three phases. There will be no piling or blasting of the site, and there is no contaminated land present on site.

5.5 Potential Impact of the Proposed Development

5.5.1 Construction Phase

<u>Potential Impacts on Designated Sites during Construction Stage</u>

European Sites

The assessment presented in the Appropriate Assessment Screening Report in respect of the proposed development (Scott Cawley Ltd., 2025) concluded that the potential impacts associated with the proposed development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the Qualifying Interests (QI) or Special Conservation Interests (SCI) of any European sites; either alone or in combination with any other plans or projects.

The proposed development does not traverse any European sites, so there is no potential for habitat fragmentation to occur.

The proposed development site does not support populations of any fauna species linked with the QI/SCI populations of any European site(s).

The closest European site, Glenasmole Valley SAC is located 4.1km southeast of the proposed development. Glenasmole Valley is designated for its Annex I Habitats, including Petrifying springs with tufa formation (Cratoneurion) [7220], Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410], and Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]. This European site is located in the same groundwater body as the proposed development site (i.e. the Kilcullen Groundwaterbody). However, the Kilcullen GWB is considered to have short groundwater flow paths (in the order of a couple of hundred metres), with groundwater discharging to the closest surface water feature (i.e., the Corbally Stream, the Cooldown Stream and the Coldwater Stream in the case of the proposed development site). Therefore, there is no perceived direct pathway from groundwater beneath the site to Glenasmole Valley SAC (Scott Cawley Ltd., 2025; DNV, 2025). There is no hydrological or hydrogeological pathway between this European site and the proposed development.

The next nearest European site with groundwater dependent terrestrial habitats is Rye Water Valley/Carton SAC, c. 10.3km north-west of the proposed development, which lies within the Dublin GWB at a significant distance from the proposed development site. The proposed development site partially overlaps both the Kilcullen and Dublin GWBs. The Dublin GWB beneath the proposed development site is considered to have short groundwater flow paths (in the order of a couple of hundred metres), with groundwater discharging to the closest surface water feature (i.e., the Corbally Stream, the Cooldown Stream and the Coldwater Stream). Therefore, there is no perceived direct pathway from groundwater beneath the site to the Rye Water Valley/Carton SAC and therefore the proposed development cannot influence groundwater conditions in the European site (Scott Cawley Ltd., 2025; DNV, 2025).

A potential source-pathway-receptor link through hydrological means has identified connectivity via the surface water and foul water networks from the proposed development site and Dublin Bay European sites. However, effects on European sites in Dublin Bay, which are North Dublin Bay SAC, North Bull Island SPA, South Dublin Bay SAC, and South Dublin Bay and River Tolka Estuary SPA, North-west Irish Sea SPA and Rockabill to Dalkey Island SAC located *c*. 23km downstream of the proposed development site, have been excluded for the following reasons, which are discussed in more detail in the AA Screening report (Scott Cawley, 2025):

- Results of the CSM carried out by DNV[39] and which informs the AA screening report, indicate that surface run-off from the proposed development, during both construction and operational phases respectively, will not result in any perceptible impact on water quality in downstream receiving waters in Dublin Bay (and thus in the European sites therein).

[39] *Large-scale Residential Development on Lands at Boherboy, Saggart, Co. Dublin, Hydrological & Hydrogeological Risk Assessment.* DNV 2025.

- The DNV report also concludes that the cumulative or in-combination effects of effluent arising from the proposed development with that of other developments discharging to Ringsend WWTP will not be significant having regard to the size of the calculated discharge from the proposal.

- Considering the above, particularly the current unpolluted status of Dublin Bay, and that foul water discharges from the proposed development would equate to a very small percentage of the overall discharge volumes sent to Ringsend WWTP for treatment, it is concluded that the proposed development will not impact on the overall water quality status of Dublin Bay.

Due to the above reasons, there are no hydrological or hydrogeological risks associated with the construction stage of the proposed development, and therefore there are no European sites at risk of habitat degradation.

There are two species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 on the proposed development site: *Allium triquetrum* and *Hyacinthoides hispanica*. *A. triquetrum* is known to invade a range of habitats include hedgerows, parks, footpaths, roadsides, waste areas, disturbed/cultivated sites, orchards, open woodlands, forests, moist pastures and riparian areas and can rapidly colonise and dominate waste ground outcompeting native vegetation[40]. *H. hispanica* is an invasive species of woodland and hedgerow habitats, and it poses a threat to the native bluebell population *Hyacinthoides nonscripta*, through extensive hybridisation, threatening the genetic integrity of, and possibly causing introgression (hybridisation out of existence) of the native plant[41]. The proposed development site is hydrologically connected European sites in Dublin Bay. These sites are designated for a range of coastal and intertidal QI habitats. However, due to the ecology, mechanism of impact and habitat requirements of the Third Schedule non-native invasive species recorded within the proposed development site, as well as the QI habitats within North Dublin Bay SAC and South Dublin Bay SAC, there is no risk of non-native invasive species spreading from the proposed development site and affecting the conservation objectives supporting the QI habitats of to any European site.

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m[42]. For birds, disturbance effects would not be expected to extend beyond a distance of *c*.300m, as noise levels associated with general construction activities would attenuate to close to

[40] O'Rourke, E. and O'Flynn, C. (2014) *Risk Assessment of Allium triquetrum.* Inland Fisheries Ireland and National Biodiversity Data Centre.

[41] O'Rourke, E. and Lysaght, L. (2014) *Risk Assessment of Hyacinthoides hispanica, including H. non-scripta x H. hispanica.* Inland Fisheries Ireland and National Biodiversity Data Centre.

[42] This is consistent with Transport Infrastructure Ireland (TII) guidance (*Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* (2006) and *Guidelines for the Treatment of Badgers prior to the Construction of National Road Scheme s(2005)*) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

background levels at that distance[43]. There are no European sites designated for QI species within the disturbance ZoI for mammal species. There are no European sites within the disturbance ZoI; the next nearest European site to the proposed development is c. 4.1km away.

There are no habitat areas within the disturbance ZoI of the proposed development that support populations of qualifying/special conservation interest species of any European site. The nearest SAC designated for otter is the Wicklow Mountains SAC, c. 5.3km south-east of the proposed development. The Corbally stream is a small order stream located in a different sub-catchment than the Wicklow Mountains SAC. Considering the size of otter territories in Ireland, and its location relative to the Wicklow Mountains SAC, any otters potentially using the Corbally stream do not form part of or support any SAC population. Therefore, as the proposed development will not result in the disturbance/displacement of the qualifying/special conservation interest species of any European site, there is no potential for any in combination effects to occur in that regard.

Nationally Designated Sites

In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the proposed development with reference to the ecological features for which the site is designated, or is proposed.

The proposed development does not overlap with any nationally designated sites and it is not located in their immediate vicinity. The nearest national site is Lugmore pNHA, located c. 1.4km south east of the proposed development. This national site is designated for its habitats, and is not hydrologically connected to the proposed development. Therefore it is outwith the ZoI of the proposed development and does not have the potential to affect the habitats within.

As the proposed development does not traverse any nationally designated sites there is no potential for habitat fragmentation or loss to occur.

A potential source-pathway-receptor link through hydrological means has identified connectivity via the surface water and foul water networks from the proposed development site and Dublin Bay national sites. There are no other national sites hydrologically connected to the proposed development. However, effects on national sites in Dublin Bay, which are North Dublin Bay pNHA, South Dublin Bay pNHA, and Booterstown Marsh pNHA located c. 23km downstream of the proposed development site, have been excluded for the following reasons, which are discussed in more detail

[43] The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*, and Wright, M., Goodman, P & Cameron, T. (2010) *Exploring Behavioural Responses of Shorebirds to Impulsive Noise*. Wildfowl (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

in the AA Screening report in relation to European sites in Dublin Bay which overlap with national sites (Scott Cawley, 2021):

- Results of the CSM carried out by DNV[33] and which inform the AA screening report, indicate that surface run-off from the proposed development, during both construction and operational phases respectively, will not result in any perceptible impact on water quality in downstream receiving waters in Dublin Bay (and thus in the national sites therein).

- The DNV Hyrdological Risk Assessment report also concludes that the cumulative or in-combination effects of effluent arising from the proposed development with that of other developments discharging to Ringsend WWTP will not be significant having regard to the size of the calculated discharge from the proposal.

- Considering the above, particularly the current unpolluted status of Dublin Bay, and that foul water discharges from the proposed development would equate to a very small percentage of the overall discharge volumes sent to Ringsend WWTP for treatment, it is concluded that the proposed development will not impact on the overall water quality status of Dublin Bay.

  Considering these, the following conclusions can be made:

- The likelihood of an accidental pollution event occurring during the construction phase of the proposed development is considered to be very low;

- Any accidental pollution event is likely to be short in duration (i.e. confined to storm events) and would only occur during the construction phase which is estimated to continue for five years, limiting the magnitude and extent of effects; and,

- The distance between the proposed development outfall of surface water runoff and the nearest national site in Dublin Bay (c. 23km), means that sediments or pollutants from the proposed development will not result in any discernible effects on national sites in Dublin Bay.

Due to the above reasons, there are no hydrological or hydrogeological construction risks associated with the proposed development, and therefore there are no nationally designated sites at risk of habitat degradation.

There are two species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 on the proposed development site: *Allium triquetrum* and *Hyacinthoides hispanica*. *A. triquetrum* is known to invade a range of habitats include hedgerows, parks, footpaths, roadsides, waste areas, disturbed/cultivated sites, orchards, open woodlands, forests, moist pastures and riparian areas and can rapidly colonise and dominate waste ground outcompeting

native vegetation[44]. *H. hispanica* is an invasive species of woodland and hedgerow habitats, and it poses a threat to the native bluebell population *Hyacinthoides nonscripta*, through extensive hybridisation, threatening the genetic integrity of, and possibly causing introgression (hybridisation out of existence) of the native plant[45]. The proposed development site is hydrologically connected nationally designated sites in Dublin Bay. These sites overlap with the SACs within Dublin Bay and are likely designated for the same coastal and intertidal habitats. However, due to the ecology, mechanism of impact and habitat requirements of the Third Schedule non-native invasive species recorded within the proposed development site, as well as the habitats within nationally designated sites in Dublin Bay, there is no risk of non-native invasive species spreading from the proposed development site to any nationally designated site.

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the proposed development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m[46]. For birds, disturbance effects would not be expected to extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance[47]. There are no nationally designated sites within the disturbance ZoI; the nearest national site to the proposed development designated for wildfowl species is Slade of Saggart and Crooksling Glen pNHA, located c. 1.5km south west of the proposed development, and therefore beyond the ZoI for disturbance related impacted from the proposed development on bird species associated with this national site.

Potential Impacts on Habitats and Flora during Construction Stage

Habitat Loss

Construction of the proposed development will result in the loss of habitat area; totalling approximately 17.4 ha. None of the habitats directly affected by the proposed

[44] O'Rourke, E. and O'Flynn, C. (2014) *Risk Assessment of Allium triquetrum.* Inland Fisheries Ireland and National Biodiversity Data Centre.

[45] O'Rourke, E. and Lysaght, L. (2014) *Risk Assessment of Hyacinthoides hispanica, including H. non-scripta x H. hispanica.* Inland Fisheries Ireland and National Biodiversity Data Centre.

[46] This is consistent with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

[47] The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. Wildfowl (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

development are of higher importance, from a biodiversity perspective, than local importance (higher value). The majority of the habitats within the proposed development boundary (*c.* 18.6 ha) are of local biodiversity importance (lower value) and predominantly comprised of improved agricultural grassland (*c.* 15.0ha), but also include improved amenity grassland, buildings, artificial surfaces and recolonising bare ground (c. 0.4a), *c.* 1.0ha of species-poor dry meadows and grassy verges, and *c.* 0.9ha of scrub. As these habitats are of local biodiversity importance (lower value), their loss or modification will not result in a likely significant effect on biodiversity at any geographic scale.

The habitat types within the proposed development boundary, and the area of each, that are considered to be of a higher local biodiversity value and will be lost are as follows:

- Wet grassland (GS4) – *c.* 1.0ha of this habitat will be lost
- Marsh (GM1) – c. 0.05ha of this habitat will be lost
- Immature woodland (WS2) – c. 0.2ha of this habitat in a mosaic with scrub (WS1)
- Hedgerows (WL1) – *c.* 353 linear metres of hedgerow will be lost
- Trees – 66 No. trees will be removed

The aquatic habitat types within the proposed development boundary that are considered to be of a higher local biodiversity value and will be impacted by the proposed development are as follows:

- Lowland/Depositing Rivers (FW2) – *c.* 20m linear length of this habitat along the Corbally Stream, and *c.* 70m linear length along the Cooldown stream to facilitate a road crossings and installation of a culvert,

The central watercourse, the Cooldown, is to be maintained as much as practically feasible and the watercourse within is re-used as a conveyance swale as part of the overall SuDS strategy. Sections of the Cooldown are to be diverted into a number of attenuation areas (storage areas 2, 5 and 8) as per the site's drainage and water infrastructure report. The Coldwater watercourse is also to be used as a conveyance swale. Additional planting is proposed in these areas as part of the SuDS strategy for the site. However, in the absence of any mitigation, there is potential for the construction of the temporary outfall to have an impact on water quality within local watercourses, the Corbally Stream and the receiving aquatic environment downstream of the proposed works area. Some examples by which water quality in the receiving aquatic environment could be compromised include the following:

- Entry of construction personnel and/or vehicles into the drainage ditches on site;

- Clearance of vegetation and exposure of topsoil within the vicinity of the drainage ditches;
- Storage of unbunded construction materials in the vicinity of the drainage ditches;
- Refuelling of vehicles in the vicinity of the drainage ditches; and
- Washing of equipment, or release of wheel wash and other construction process waters to the drainage ditches and the downstream watercourses.

The most likely impacts on water quality arising from the aforementioned practices would be elevated levels of suspended solids in the water column, and entry of hydrocarbon and other chemical pollutants to the watercourse. Although rivers such as the Corbally Stream are likely to undergo periods when suspended solids are elevated, such as after a storm, construction in the vicinity of the stream would result in an increase in the frequency of these periods. Silts and sediments from the construction site could potentially smother existing gravel and sand beds, and the aquatic benthic invertebrates that inhabit this habitat. Sedimentation also has the potential to affect fish species resident in the aquatic environment downstream. The introduction of pollutants such as hydrocarbons to the stream could result in both a reduction in habitat quality and a reduction in oxygen levels, affecting the aquatic species that reside in this habitat. The effects of water quality impacts on aquatic habitats during construction and operation is considered to be significant at a local to county level, in the absence of any mitigation.

Habitat degradation from spread of invasive species

Two species of non-native, invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded within the proposed development site: Three cornered garlic *Allium triquetrum* and Spanish bluebell *Hyacinthoides hispanica*. Due to the ecology, mechanism of impact and habitat requirements of these non-native invasive species, as well as the habitats within European and nationally designated sites in Dublin Bay (which have hydrological connectivity to the site), there is no risk of non-native invasive species spreading from the proposed development site to any nationally or European designated sites. However, there is the potential for habitat degradation from spread of both invasive species within the proposed development site via the movement of contaminated soil. Both species reproduce by seed and vegetatively via bulbs. [40, 41]

Habitat degradation from dust generated during construction

The proposed development has the potential to generate dust during construction works which could affect vegetation in habitat areas within and adjacent to the proposed development boundary. This has the potential to affect highly sensitive and ecologically important habitat areas (e.g. designated area for nature conservation or areas of Annex I habitat), however no such designations or Annex I habitats have been identified within close proximity of the proposed development that could potentially be impacted by dust arising from the construction works. As such dust impacts could result in a likely significant negative effect, at a local geographic scale only.

An Accidental Pollution Event Affecting Surface Water Quality in the Receiving Environment

During construction, contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water feature has the potential to have a significant negative impact on water quality and consequently affect aquatic and wetland habitats in the local receiving environment.

However, it is considered unlikely that a pollution event of such a magnitude would occur during construction or be any more than temporary in nature. Particularly considering the environmental protection controls that are in accordance with policies and objectives in the relevant county development plans and local area plans. Nevertheless, a precautionary approach is being taken in assuming a level of risk of water quality impacts. In stream/near stream works and the excavation, handling, stockpiling, reprofiling and removal offsite of soils and subsoils during construction works at the site could result in generation of runoff with entrained sediment or other contaminants which could potentially impact on the receiving water quality and WFD status of the receiving surface waterbodies (i.e., Corbally, Coldwater, and Cooldown Streams) and locally within the downstream Camac River (DNV, 2025). Consequently, detailed mitigation measures are required to further minimise the risk of the proposed development having any perceptible effect on water quality.

Habitat degradation as a consequence of effects on surface water quality has the potential to affect the conservation status of aquatic or wetland habitats and therefore, has the potential to result in a significant negative effect at a local geographic scale.

Habitat loss

Badger

Badgers, and their breeding and resting places, are protected under the Wildlife Acts. Due to their stable Irish populations, they are classified as “Least concern” in terms of conservation (Nelson *et al.*, 2019). The proposed development site has the potential to be used by badger due to suitable habitat for foraging and sett building, however no evidence of this species was identified during field surveys carried out within the lands. During the construction stage of the development, badgers could be impacted by the removal of foraging areas and feeding resource available. However, the overall loss of habitat is small and not significant at any scale, considering the typical badger territory size of more than 60ha in Ireland (Hayden and Harrington, 2000), and the abundance of available suitable habitat surrounding the proposed development site. Although the actual effect of foraging habitat loss cannot be quantified in terms of any threshold value that could be predicted, any affected badger groups would be expected to adapt to the changed landscape. It is therefore predicted that, despite any temporary effects, the loss of foraging habitat associated with the proposed development is unlikely to affect the conservation status of the local badger population and will not result in a likely significant negative effect, at any geographic scale.

Otter

No evidence of otter was noted on site, however the Corbally Stream is suitable for commuting and/or foraging otter. There are no otter holts or couch sites present within

the proposed development boundary. Therefore, the proposed development will not result in the loss of any breeding or resting places and construction works will not disturb any such sites.

In the context of river systems, the Threat Response Plan Otter *Lutra lutra* 2009-2011 document (Department of the Environment, Heritage and the Gaeltacht, 2011) defines terrestrial otter habitat as a 10m zone of riparian habitat along the riverbanks. The proposed development will be a minimum of 15m set back from the banks of the Corbally Stream. The Corbally Stream contains *c.* 5.3km of suitable otter habitat, and as only *c.* 20-30m will be lost during construction, this is not considered a likely significant effect on any geographic scale.

Other mammals

The proposed development site has the potential to be used by hedgehogs, pygmy shrews, Irish hare, and Irish stoat due to suitable habitat for foraging and breeding and the presence of these species from the local area from the findings of the desktop review. The construction stage of the development will reduce the amount of semi-natural habitat available for foraging in this area for small mammals, however, the overall loss of habitat is small and not significant at any scale, considering that the peripheries of the site and the drainage ditches will largely be retained and still provide commuting and/or foraging habitat for these species, and the abundance of available suitable habitat surrounding the proposed development site for all of the aforementioned species.

Given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, vegetation clearance is unlikely to result in a level of mortality that would affect the species' conservation status, and result in a significant negative effect, even at a local geographic scale.

Birds

In the absence of mitigation to protect birds and their nests, there is potential for direct impacts on breeding birds due to loss of suitable breeding bird habitat and/or the risk of direct mortality and injury to birds, which may arise from the clearance of vegetation within the proposed development site. This potential impact would be most likely to arise if clearance works are undertaken during the time of year when birds are likely to be nesting (*i.e.* 1st March to 31st August, inclusive).

With the exception of treelines, hedgerows and scrub, the habitats in the lands are of low suitability for nesting bird species. Species that commonly nest in grassland vegetation were not encountered during surveys of the lands in 2020, 2021, 2023 or 2024. The bird species recorded at the proposed development site during surveys include those that are commonly found in suburban and urban habitats (*e.g.* blackbird, hooded crow, robin and wren). These habitats include hedgerows, treelines and grasslands, which can be found in the wider surrounding area, such as to the west and south of the proposed development site.

The clearance of vegetation may result in a loss of breeding bird habitat, however considering the amount of suitable foraging habitat located within the wider environs,

the habitat loss will result in a significant negative effect on the populations of bird species at a local scale only.

Under the Wildlife Acts, it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. Mitigation measures have been provided to ensure adherence to the Wildlife Acts.

Bats

All bat species and their roost sites are strictly protected under both European and Irish legislation including: -

- Wildlife Act 1976 and Wildlife (Amendment) Act, 2000 (S.I. No. 38 of 2000)
- Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 (Council Directive 92/43/EEC)

European Communities (Birds and Natural Habitats) Regulations, 2011

It is an offence under Section 23 of the Wildlife Acts 1976-2017 and under Section 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the European Communities (Birds and Natural Habitats) Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction. Under Section 54 of S.I. 477 of 2011, a derogation may be granted by the Minister where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range.

The proposed development will not directly, or indirectly, affect any known bat roosts. The trees on site with the potential to support roosting bats and which could be occupied at the time of site clearance, therefore could result in the potential for bats to be injured or killed. All the bats recorded using the site are common species in Ireland that are classified as being of “least concern” in the Ireland Red List No. 3: Terrestrial Mammals (Marnell et al., 2019). The trees within the proposed development site that have some potential for roosting bats, are not considered to be of significant in size and are unlikely to hold enough space for them to be maternity or hibernation roosts. Some of these trees are deemed for removal to facilitate the development, and so mitigation measures are provided. The effects of loss of these potential roost sites on bats are not considered to be significant at any geographic scale for these reasons.

The proposed development will include the removal of bat foraging habitat and, although there are no bat roosts present within the proposed development site, construction works will result in the removal of trees and buildings onsite.

With regards to the loss of foraging habitat, the majority of the treelines along the boundaries are to be retained within the design of the scheme and will therefore continue to provide foraging opportunities for bats. While there will be a loss of vegetation in the south of the site, proposed native planting along the western boundary and within the site will compensate for this loss of habitat and provide additional screening of the development on the local landscape. The effects of loss of

foraging habitats on bats are predicted to be temporary in nature, until planted vegetation can develop, and significant at a local geographic scale.

Disturbance/displacement

Badger

While the proposed development will result in increased human presence on site, the potential effects on badgers in terms of disturbance are not significant in this instance. This is because, the proposed construction works are limited in terms of scale, and as works will largely be confined to daylight hours, when badgers are least likely to forage within the proposed development site, and there was no evidence identified within the proposed development of this species. Even in the event that the construction phase of the proposal coincides with construction of other projects in the immediate vicinity, there will be no significant disturbance or displacement effects on badgers. Badgers are widespread in Ireland and found in close proximity to human settlements, including in Dublin City, and therefore are likely to adapt to changes in human activity levels in the proposed development site and surrounding area.

Birds

The potential for disturbance is likely to arise from noise associated with the construction phase of the proposed development. For birds, construction-related disturbance effects would not be expected to extend beyond a distance of *c.* 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance (Cutts et al., 2009). A range of bird species utilise the proposed development site to forage within. While there is some potential for short-term disturbance of bird species foraging within the lands at the early stage of construction, it is anticipated that birds will acclimatise to human presence. This is because the lands are in a semi-urban locality, and the bird species noted onsite are generally associate with gardens and other urban habitats frequented by people. The potential for disturbance of foraging bird species during construction is not considered to be significant at any geographic scale.

Bird species are protected under the Wildlife Acts as per Section 2.1 and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests. The proposed development site contains several common species of bird, many of which are likely to nest within hedgerows, treelines, woodland and scrub. There is potential for direct impacts on nesting birds and/or mortality of birds arising from the clearance of vegetation within the site. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (1st March to 31st August, inclusive). The potential for disturbance of breeding bird species during construction is considered to be significant at local geographic scale.

Amphibians

Site clearance works have the potential to result in disturbance to, and the direct mortality of amphibians. Given the size of the suitable habitats within the site (drainage ditches), and the retention of same, the number of individuals that would potentially be at risk is very low and impacts on such individuals would be unlikely to affect the local populations in the long-term. However, common frog is protected under the Wildlife

Acts and it is an offence to hunt, take or kill them, or wilfully to interfere with or destroy their breeding places. Mitigation measures have been provided to ensure adherence to the Wildlife Acts.

Bats

The removal of trees and buildings onsite to facilitate the construction of the proposed development has the potential to result in disturbance of bats or their roosts, or in a worst-case scenario, the mortality of bats roosting in features within the trees or structures. The disturbance or mortality of bat species in the absence of mitigation is considered to result in a likely significant effect, at a local scale only.

Disturbance/displacement effects may also arise from the introduction of artificial lighting during construction. While *Myotis* species and brown long-eared bats are sensitive to light pollution, the most commonly recorded species within the proposed development site (i.e. Leisler's bat, soprano pipistrelle and common pipistrelle) are some of the least sensitive species to artificial light spill, and given the presence of artificial lighting within the immediate vicinity of the proposed development area (i.e. along the northern and eastern boundary) the local bat population would be expected to be habituated to local levels of artificial light spill. In addition, bats recorded using the proposed development site are widespread and common across Ireland and frequently utilise urban and sub-urban environments where they are regularly exposed to levels of noise from urban activities. It is possible that temporary lighting required during the construction stage of the proposed development may illuminate previously unlit feeding and/or commuting areas, e.g. areas away from treeline retention areas, making them unsuitable for bats. Any effects associated with artificial lighting during construction of the proposed development, is likely to be short-term (over the 5-year phased construction period) and confined to specific areas within the site. It is therefore predicted that, despite any short-term effects, disturbance from artificial lighting associated with construction of the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect, at any geographic scale.

<u>Potential Impacts from Habitat degradation</u>

Otter

During construction, contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water feature has the potential to have a significant negative impact on water quality in the Corbally Stream, and consequently an impact on otter; either directly (e.g. acute or sub-lethal toxicity from pollutants) or indirectly (e.g. affecting their food supply or supporting habitats).

An accidental pollution event affecting surface water quality during construction or operation has the potential to result in a likely significant negative effect, at a county geographic scale.

However, it is considered unlikely that a pollution event of such a magnitude would occur during construction or operation, or be any more than temporary in nature. Nevertheless, a precautionary approach is being taken in assuming a level of risk of water quality impacts and detailed mitigation measures are required to further minimise

the risk of the proposed development having any perceptible effect on water quality in the local area.

Amphibians

During construction, contaminated surface water runoff and/or an accidental spillage or pollution event into any surface water feature has the potential to have a significant negative impact on water quality and consequently an impact on amphibian species; either directly (e.g. species coming into direct contact with pollutants) or indirectly (e.g. acute or sub-lethal toxicity from pollutants affecting their food supply or supporting habitats). The effects of frequent and/or prolonged pollution events in a waterbody have the potential to be extensive and far-reaching and could potentially have significant long-term effects.

However, it is considered unlikely that a pollution event of such a magnitude would occur during construction or be any more than temporary in nature. Nevertheless, a precautionary approach is being taken in assuming a level of risk of water quality impacts and detailed mitigation measures are required to further minimise the risk of the proposed development having any perceptible effect on water quality during construction.

Habitat degradation as a result of effects on surface water quality during construction has the potential to affect the species' conservation status and result in a likely significant negative effect, at a local geographic scale. Mitigation measures have been designed to protect water quality during construction (see Chapter 7 Water, and in the project CEMP[48]).

White-clawed crayfish

White-clawed crayfish were not identified within the proposed development site during aquatic surveys in July 2023, however the NBDC database search identified records within c. 2km of the proposed development site.

Whilst the habitat within the site is deemed unsuitable for this species, an accidental pollution event resulting in degradation of water quality downstream to areas of suitable habitat, could result in a significant effect on white-clawed crayfish at a local geographic scale.

5.5.2 Operational Phase

Potential Impacts on Designated Sites during Operational Stage

European Sites

The assessment presented in the Appropriate Assessment Screening Report concluded that the potential impacts associated with the proposed development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the qualifying interests or

[48] DNV (2025) Construction Environmental Management Plan (CEMP). Large-Scale Residential Development on lands at Boherboy, Saggart, Co. Dublin

special conservation interests of any European sites; either alone or in combination with any other plans or projects.

Chapter 7 of this EIAR submitted with this application deals with the hydrology of the proposed development site, alongside a Hydrological and Hydrogeological Risk Assessment (DNV, 2025) for the site. The chapter and risk assessment assess the hydrological and hydrogeological risks associated with the proposed development. The assessments noted that based on the potential sources of pollution from the proposed development during construction and operation phases, there is no potential for impacts to occur on European sites in Dublin Bay. This conclusion is based on a good understanding of the hydrological and hydrogeological environment, plausible sources of impact and knowledge of receptor requirements. This allows possible source-pathway-receptor linkages to be identified. Potential sources of impacts during construction and operation were considered in the assessments and all potential sources of contamination were considered in relation to European sites without taking account of any measures intended to avoid or reduce harmful effects of the proposed development (mitigation measures) i.e. a worst-case scenario.

The results of the assessments carried out by DNV indicate that surface run-off from the proposed development, during both construction and operational phases respectively, will not result in any impact on water quality in downstream receiving waters in Dublin Bay (and thus in the European sites therein).

In line with good practice effective mitigation measures have been included in the construction design, management of construction programme and during the operational phase of the proposed development. However, it must be noted that these are included in the design, not for the purposes of avoiding or reducing any potential harmful effects to any European sites but are required for new developments under the under the objectives of the Greater Dublin Strategic Drainage Study and South Dublin County Council Development Plan and in line with good construction practice.

It is an objective of the Greater Dublin Strategic Drainage Study, and the South Dublin County Council Development Plan 2022-2028, to incorporate Sustainable Urban Drainage Systems (SUDS) within new developments. The SUDS features associated with the proposed development are not included within the design to avoid or reduce any potential harmful effects to any European sites.

Therefore, there is no possibility of the proposed development during operational stage undermining the conservation objectives of any of the qualifying interests or special conservation interests of the European sites in, or associated with, Dublin Bay as a result of surface water run-off or discharges.

National Sites

Nationally designated sites would be subjected to the same potential impacts from operational stage described above with respect to potential impacts on European sites. In absence of mitigation, such potential impacts may result in a likely significant effect at the national geographic scale.

There is a hydrological connection between the proposed development site and the nationally designated sites within Dublin Bay, North Dublin Bay pNHA and South Dublin Bay pNHA, however, the Hydrological and Hydrogeological Risk Assessment (DNV, 2025) has concluded that there is no pathway for potential impacts to occur via this hydrological connection due to the hydrological ZOI not extending into Dublin Bay.

Potential Impacts on Habitats and Flora during Operation Stage

The majority of the habitats within the proposed development will be either removed or replaced during the construction stage, prior to operation of the proposed development. The primary remaining sensitive habitats located within the proposed development site are the hedgerows and treelines that are to be retained along the boundaries of the site. No further impacts on these habitats and flora are expected during the operational stage of the proposed development, with the exception of a likely increase in footfall and human traffic within these habitats.

Habitat degradation from spread of invasive species

In the absence of invasive species management prior to construction, the existing invasive species on site (i.e. Three cornered garlic *Allium triquetrum* and Spanish bluebell *Hyacinthoides hispanica*) could be spread due to landscaping activities such as trimming of hedgerows and roadside verges, inappropriate dumping and transportation of soil or vegetation with seed or bulbs, or grass cutting[40, 41] during the operational phase of the proposed development. Therefore, there is the potential for habitat degradation from the spread of both invasive species within the proposed development site during the operational phase.

Potential Impacts on Fauna during Operational Stage

Badger

The proposed development site has the potential to be used by badger due to suitable habitat for foraging and sett building, however no evidence of this species was identified during field surveys carried out within the lands. The conversion of the lands to buildings and artificial surfaces, with associated planting and other landscaping elements, will reduce the amount of semi-natural habitat available for foraging in this area for badgers, however, the overall loss of habitat is small and not significant at any scale, considering the typical badger territory size of more than 60ha in Ireland (Hayden and Harrington, 2000), and the abundance of available suitable habitat surrounding the proposed development site. Periphery commuting corridors will also be maintained and will be available to badger as wildlife corridors in the long-term.

Other mammals

The proposed development site has the potential to be used by hedgehogs, pygmy shrews, Irish hare, and Irish stoat due to suitable habitat for foraging and breeding and the presence of these species from the local area from the findings of the desktop review. The conversion of the lands to buildings and artificial surfaces, with associated planting and other landscaping elements, will reduce the amount of semi-natural habitat available for foraging in this area for small mammals, however, the overall loss of habitat is small and not significant at any scale, considering that the peripheries of

the site and the drainage ditches will be retained and still provide commuting and/or foraging habitat for these species, and the abundance of available suitable habitat surrounding the proposed development site for all of the aforementioned species.

Given the relatively low numbers of individuals of each species that are likely to be affected, that they are highly mobile species and the suitability of the habitat in the surrounding lands in the south and west, the change in habitat is unlikely to result in a level that would affect the species' conservation status, and result in a significant negative effect, even at a local geographic scale.

Birds

With the exception of treelines, hedgerows and scrub, the habitats in the lands are of low suitability for nesting bird species. Species that commonly nest in grassland vegetation were not encountered during surveys of the lands in 2020, 2021, 2023 and 2024. The effects of habitat loss on bird species arising from the proposed development during operation will not be significant at any geographic scale for the following reasons:

- While the lands will be of lower suitability for foraging species for the duration of the construction phase of the development, the implementation of landscape planting will enhance the lands in terms of foraging opportunities for common garden bird species; and,

- Majority of the habitat with suitability for nesting bird species i.e. treelines, is being retained in the proposed development, and the implementation of landscape planting (incl. additional trees and treelines) will enhance the lands in terms of breeding opportunities.

Wintering birds will benefit of implementation of landscape planting similarly to breeding birds. Due to aforementioned factors, the effects of habitat loss on wintering bird species arising from the proposed development will not be significant at any geographic scale.

Bats

Bats are considered to be light-sensitive species, and increased illumination of a site can affect how bats may utilise a site (ILP, 2023). For roosting bats, increased light levels can affect predation, as avian predators tend to rely on vision to catch their prey, and increased light levels at night-time may increase bats vulnerability to predation. Illumination of foraging and commuting habitat can result of abandonment of habitat. The response to lighting in Ireland by foraging bats varies by species, with Leisler's bat, a high-flying species, as well as common pipistrelle bat and soprano pipistrelle bat appearing to be least affected by lighting (Roche et al., 2014).

The habitat within the subject lands were mostly unlit during the surveys in 2020, however the eastern and northern boundaries were partially illuminated with streetlights. During its operation, and in the absence of any mitigation, it is anticipated that the proposed development will result in an increase in lighting of the site. Light spill will originate both from installation of public lighting in the residential areas, as well

as from the residential properties themselves (e.g. incidental light pollution from house windows). The cumulative increase in light spill will be minor, as the development site suffers from some light spill from the adjacent public road and adjoining properties, and commuting and foraging areas and located away from any potential light spill areas. However, in the absence of mitigation this is likely to result in a likely significant effect, at a local scale.

5.5.3 Potential Cumulative Impacts

This section of the report presents the assessment carried out to examine whether any other proposed developments have the potential to act cumulatively with the proposed development to give rise to likely significant effects on biodiversity.

As set out in the South Dublin County Development Plan 2022-2028, the lands surrounding the site are a combination of different zoning objectives. The lands to the east and north are zoned as 'R2 - Existing residential' under Objective – to protect and-or improve residential amenity in the South Dublin County Development Plan 2022-2028 (South Dublin County Council, 2022). To the west, and partially to the north eastern corner of the site are zoned as 'G1 - Open space, park' under Objective – to preserve and provide for open space with ancillary active recreational amenities. The south of the site is zoned as 'P1 – Agriculture' under the Objective – To protect and improve rural amenity and to provide for the development of agriculture. The proposed development land itself, form an area earmarked as 'R1 – New/proposed residential' within the South Dublin County Development Plan (South Dublin County Council, 2022).

Potential cumulative impacts may arise during construction and operation, as a consequence of the proposed development acting in-combination with other plans and projects, on water quality in the downstream surface water environment, disturbance to birds, bats, small mammals and badger, as well as habitat loss to bats, birds, small mammals, otters and badger.

The most likely cumulative effect of other future development with the proposed development on the receiving environment is the potential for other pollution sources within the River Liffey catchment, to cumulatively affect water quality in the receiving surface water, estuarine and marine environments. There will be no significant cumulative impacts on water quality in the downstream surface water environment in the downstream Camac River, River Liffey or Dublin Bay as a consequence of the proposed development acting in-combination with other plans and projects, as the development itself will not have any adverse effects on the downstream surface water environment. The potential for in combination effects to arise in downstream environments from any existing or proposed land use plans or developments is regulated and controlled by the environmental protective policies and objectives of the South Dublin County Development Plan 2022-2028 and any other county level land use plans which can influence conditions in Dublin Bay: Dublin City Development Plan 2022-2028 (Dublin City Council, 2022), the Dún Laoghaire-Rathdown County Development Plan 2022-2028 (Dún Laoghaire-Rathdown County Council, 2022), the Fingal Development Plan 2023-2029 (Fingal County Council, 2023), or any other county level land use plans which can influence conditions in Dublin Bay via rivers and

other surface water features. Any existing/proposed plan or project that could potentially affect downstream environments, must adhere to these overarching environmental protective policies and objectives. These policies and objectives will ensure the protection of the downstream environments within the zone of influence of the proposed development, and include the requirement for any future plans or projects to undergo Screening for Appropriate Assessment and/or Appropriate Assessment to examine and assess their effects on European sites, alone and in combination with other plans and projects. Therefore, there is no possibility of any other plans or projects acting in combination with the proposed development to undermine the conservation objectives of any of the qualifying interests or special conservation interests of Natural Heritage Areas or European sites in, or associated with, Dublin Bay as a result of water quality effects.

There are general overarching policies in the South Dublin County Development Plan 2022-2028 to ensure that proposals for development integrate the protection and enhancement of biodiversity (NCBH5 Objective 1) and to ensure developments do not have a significant adverse impact on rare and threatened species. There are also specific objectives to protect European sites (NCBH3 Objective 1), prevent development that would adversely affect the integrity of any European site(s) or National site(s) (NCBH4), to ensure that development does not have significant impact on protected habitats and species (NCBH5 Objective 2), to encourage the retention of hedgerows and prevent the loss and fragmentation (NCBH11 Objective 3). The South Dublin County Development Plan 2016-2022 also has specific policies and objectives relating to the protection of surface water and groundwater resources (e.g. NCBH2 Objective 4, Policy G 5).

Considering the predicted impacts associated with the proposed development, the mitigation measures proposed to protect the local biodiversity resource and the receiving environment, and the protective policies and objectives on the land-use plans that will direct future development locally, significant cumulative negative effects on biodiversity are not predicted.

5.5.4 “Do Nothing” Impact

The continuation of the existing management practices at the proposed development site in a “do-nothing” scenario, would maintain the current habitats present. The proposed development site would continue to provide suitable foraging and breeding habitat for badgers, as well as bird and small mammal species, suitable foraging and roosting habitat for common bat species, and suitable foraging and commuting habitat for otters. The eastern field would continue to be used for cattle grazing, and the drainage ditches would likely become degraded further due to this. The western field would be cut regularly and potentially also used for grazing animals.

As set out in the South Dublin County Development Plan 2022-2028, the lands are zoned as ‘R1 – New/proposed residential’. Therefore the lands would eventually be developed for residential purposes in the future, and would remain in its current state until this time.

5.6 Avoidance, Remedial & Mitigation Measures

5.6.1 Construction Phase

Mitigation Measures for Habitats during Construction Stage

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b), as follows:

- All trees along the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree.

- The RPA will be defined based upon the recommendation of a qualified arborist

- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it

- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10 m of any retained trees, hedgerows and treelines

- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist

- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged

In the case of the marsh habitat on site, it is not practical to retain the marsh habitat in its current location owing to changes in the ground levels to address site accessibility requirements. Therefore, it is instead proposed to translocate the habitat (comprising approximately 0.05 ha) to another location within the proposed development site. The proposed translocation approach is based on a review of case studies and is considered to be a pragmatic and feasible solution in light of design constraints, and has been developed through a multidisciplinary iterative design approach with input from the design team's engineers, hydrogeologist, landscape design team and ecologists. The area identified for habitat translocation and creation is to provide a greater area (0.13 ha) to that being permanently lost to the proposed development. A

replacement ratio greater than one-to-one is used in this instance because of the uncertainty inherent in habitat compensation and translocation.[49] This is detailed in the accompanying Marsh Translocation Report (Gannon & Associates, 2025).

Prior to works commencing, a detailed Ecology Site Management Plan specific to the contract programme will be prepared by a suitably qualified ecologist with reference to the construction programme. This may influence the timing and co-ordination of these works and the requirement for storage of soils. The management plan will be issued to the site contractor and team involved in the translocation works, and will include a site specific method statement outlining step-by-step actions for the site contractor to implement within a specified timescale, under the supervision and advice of the ecologist. It will also include a check-list of conditions to be assessed by the ecologist at the receptor site during ecological monitoring to be carried out prior to, during and post translocation works. The requirement for an Ecology Site Management Plan by the Contractor does not reflect any current inadequacy in the information presented here and relied upon in the EIA Report; rather the management plan to be prepared will merely serve to provide more site-specific detail and methodological steps to the principles and proposals already outlined in this report.

Engineering solutions will be implemented as required to complement the site's existing hydrological and hydrogeological regime to create an appropriate degree of waterlogging at the receptor site to allow for habitat establishment and long-term persistence on site. These solutions will include diversion of subsurface drains into the receptor site area and/or creating areas of low elevation or depressions that can be flooded and retain water and/or excavating to the depth of the seasonal water-table[50]. The receptor site will be prepared in conjunction with any required engineering solutions through the removal of surface vegetation and the creation of suitable hollows/depressions to receive the translocated vegetation.

Once the receptor site has been suitably prepared, translocation involves the removal of turves, soil and/or plant species from the impacted donor site to the new receptor site. Turves of habitat will be carefully removed from the chosen donor site using a suitable excavator (*i.e.* with adequate capacity to carefully remove the intact turve). The excavated turves will be temporarily stored in standing water. Some of the underlying soils will then be excavated and used to line the receptor site hollow. Due to the wetness of soils associated with the habitat, it is recommended that, where possible, they are translocated immediately from the donor site to the receptor site. In the event of this not being possible, the duration of storage should be minimal. Soil translocation is useful to introduce chemically and physically suitable substrate for growth of target plant species, as well as a mixture of soil organisms such as bacteria, fungi and invertebrates, and a mixture of wetland vegetation (as seeds,

[49] CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine V1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

[50] Gilbert, O.L., and Anderson, P. (1998) *Habitat Creation and Repair.* Oxford University Press.

tubers or rhizomes).[51] The turves should be translocated into the receptor site in early spring, at the end of dormancy, just before full growth.

In addition to turves excavated from the existing marsh habitat, supplemental landscape planting on and around the translocated turves of suitable species reflecting those recorded on site and typical of marsh may be implemented during the establishment phase as monitoring identifies gaps where the translocated vegetation may be locally slow to establish. Species that may be used would include those typical of a marsh habitat, and is detailed in Marsh Translocation Report. Many of these species have been proposed to be utilised in the ongoing SDCC ICW projects, such as at Tymon Park[52].

In compensating for the losses of these habitat types, the proposed development is not likely to result in a significant residual effect, at any geographic scale, on marsh (GM1).

Prevention of spread of invasive species during construction

Any Third schedule invasive species (*Allium triquetrum* and *Hyacinthoides hispanica*) must be removed from the proposed development site in advance of construction works.

- A confirmatory pre-construction invasive species survey will be undertaken by an ecologist, arranged by the appointed contractor/client to confirm the absence, presence and / or extent of all Third Schedule non-native invasive species within the footprint of the proposed development site

- During advance works and prior to commencement of construction, any areas where Third Schedule non-native invasive species have been recorded must be clearly fenced off (in order to avoid spreading seeds or plant fragments around or from the site) prior to their excavation and removal off-site to a licenced facility for invasive species by an appointed invasive species management (ISM) contractor which shall be completed prior to the commencement of construction works. Earthworks or machinery movement must be avoided in any areas where non-native invasive species have been identified during the pre-construction surveys, until the relevant stands have been eradicated, by the ISM contractor and/or under the supervision of the ISM contractor.

- All equipment and machinery will be cleaned prior to entry into the proposed development site as biosecurity measures to avoid transfer of invasive species on equipment and machinery which may have been used elsewhere.

[51] Taylor N.G., Grillas P., Smith R.K. & Sutherland W.J. (2021) *Marsh and Swamp Conservation: Global Evidence for the Effects of Interventions to Conserve Marsh and Swamp Vegetation*. Conservation Evidence Series Synopses. University of Cambridge, Cambridge, UK.

[52] Nicholas O'Dwyer Ltd. (2019*) River Poddle Flood Alleviation Scheme, Volume 4 EIAR: Appendix 5-3 Integrated Constructed Wetland Report.*

- Erection of clear signage will be undertaken at the construction compound (and any discrete construction areas) and inclusion of detail during tool-box talks or similar (environmental induction) for construction staff in respect of the management of Third Schedule non-native invasive species. The signage and notification should be easily understood so that users are aware of the measures to be taken for the locations of non-native invasive species on site

- In consultation with the ISM contractor, identify dedicated access points into and out of fenced off areas. These shall not be breached until such time that the ISM contractor, 1) has confirmed eradication / removal of non-native invasive species, or 2) is present to supervise works to commence the treatment / eradication process;

- Where possible, the locations of dedicated footwear and wheel wash facilities should be identified and updated by the ISM contractor. Where a dedicated / bespoke wheel wash cannot be installed owing to space limitations, the ISM contractor shall, in conjunction with the appointed contractor, ensure that no excavated loose material is allowed offsite from within an exclusion zone. Similarly, where plant that is used to excavate soils, it shall be visually checked for loose soil before movement to another part of site (where possible, the movements of tracked machinery should remain outside the non-native invasive species exclusion zone as defined by the ISM contractor or strictly supervised by the ISM contractor where unavoidable). Loose soil shall be scraped off and the material double-bagged and brought to a clearly demarcated and dedicated quarantine area for disposal to an authorised facility, and a solution of Virkon© (or similar approved disinfectant) applied to machinery to ensure that no obscured seed/root material remains viable.

- Vehicular movements within any exclusion area shall be minimised as far as is practical.

- Machinery which has been used for the transport and / or excavation of infected / suspected infected vector material shall be thoroughly washed down, and the washings captured in a quarantined bunded container for disposal. All such machinery / plant shall not be permitted to commence work elsewhere on or off-site until written confirmation of clearance of vector material has been undertaken.;

- Dedicated wash down and solution capture should be set up in the construction compound. All washings should be stored in a quarantined bunded container that is rated for such storage until such time that they are removed offsite for disposal and a facility that is authorised to accept such waste;

- Except in very particular circumstances, under the guidance of the ISM contractor, there shall be no temporary storage of infected / suspected infected soils on-site;

- Where small volumes e.g., volume capable of being double bagged in quarantine bags such as cut plants, bulbs or loose soil occur, it may be practical to bag and/or containerise the material and bring it to a clearly demarcated and dedicated quarantine area within the construction compound until such time that the material is disposed of to an authorised facility, similar to the process of disposing of bulk excavated infected soil. The temporary storage of small amounts of infected material shall not occur within 50m of any watercourse and any land within an identified flood zone.

- Where the movement of any Third Schedule species is required off-site, a licence will be required from NPWS under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) in advance of any movement to a site/facility licenced to accept such waste.

- In the case of *Allium triquetrum* and *Hyacinthoides hispanica* within the proposed development site, eradication of infestations can be achieved through physical removal. Hand digging of individuals should be carried out when above-ground biomass is visible (i.e. early spring) ensuring that all biomass including bulbs collected.

Protection of Vegetation from Dust during Construction

To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and, sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis.

Protection of water quality

Mitigation measures to protect surface water in the receiving environment during construction are described in Chapter 7 of this EIAR, and in the project CEMP, and include the following:

- A riparian buffer zone of 20 metres will be maintained at all waterbodies. Entry to the stream channel by vehicles and/or personnel will not be permitted under normal circumstances. Works will be carried out from the bank side. Where instream works are proposed however, they will be restricted to the period 1st July through 30th September, inclusive to minimise the risks to any salmonids downstream,
- Road stream crossings will be box culverts in design due to the associated site constraints (i.e. the presence of trunk watermains at the location of the proposed crossings and the requirement for the achievement of greater than minimum vertical separation), the requirement to tie into existing roads, and the narrow width of the watercourse on site. Embedded culverts will be buried to a depth of 500mm below the stream bed at the natural gradient, and will be back filled with clean gravel to match the existing stream profile. The culvert will be

sized to maintain the natural channel width. The stream crossings will be implemented as per a method statement agreed by the appointed contractor and IFI,

- There will be no direct discharges to surface waters during the construction phase,
- Prior to any machinery working on site for any purpose, the working area will be marked out with wooden stakes and where deemed necessary, hazard tape will be erected to identify the working limits,
- Provision of measures to prevent the release of sediment during the construction work will be installed prior to any site clearance. In respect to works adjacent to the drainage ditches and streams with flowing water, these measures may include but not be limited to the use of silt fences, sedimentation mats etc.,
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the receiving water environment,
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence,
- Working limits to be checked at the end of every day by the Site Manager
- If pouring of cementitious materials is required for the works adjacent to a pond, surface water drainage features, or drainage features connected to same, this will be carried out during dry weather
- Discharge water generated during placement of concrete will be removed off site for treatment and disposal
- Where stockpiling is required, temporary stockpiles will be located >20 metres from any water features. Three sides will be surrounded with silt fences with access from the fourth (uphill) side. Sides will be smoothened and collection of run-off considered i.e. discharging to a settlement pond etc.
- The contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly
- Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. Concrete washout areas will be located remote from any surface water drainage features to avoid accidental discharge to watercourses
- No storage of hydrocarbons or any polluting chemicals will occur within 50m of the surface water network. Fuel storage tanks will be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Re-fuelling of plant will not occur within 50m of the surface water network and only in bunded refuelling areas
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste
- If any heavily contaminated land is encountered during construction, it will be removed off-site and be disposed of at a licenced waste facility

- Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters will be treated using best practice, appropriate measures/controls dependent on the nature of the contamination prior to discharge to the surface water network
- There will be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time
- Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses
- An Emergency Response Plan detailing the procedures to be undertaken in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident will be prepared
- Ensure site staff are trained in the implementation of the Emergency Response Plan and the use of any spill control equipment as necessary
- The contractor will employ an environmental specialist who will monitor water quality upstream and downstream of the area of works. Data on pH, conductivity, and suspended solids will be collected as follows:
    - Twice weekly visits during general site works
    - Daily site visits during key construction activities (to be agreed between the environmental specialist and Dun Laoghaire-Rathdown County Council), e.g. during installation of the proposed outfall, during and immediately after clearance of on-site vegetation.
    - Event inspection e.g. following heavy rainfall events or during concreting works
- Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations should be agreed at commencement and based on the baseline established in the two months prior to works commencing. Note: Additional measures will be implemented in the event that threshold concentrations are surpassed
- All monitoring data should be collated to show trends for indicator parameters pH, conductivity, suspended solids and hydrocarbons, and will be shared at regular intervals with South Dublin County Council.

These mitigation measures are for the protection of the water quality within the Corbally, Coldwater, and Cooldown streams only, and not for the protection of European Sites downstream as there are no significant effects likely to arise on European sites as a result of water quality impacts associated with the proposed development, as discussed above in Section 6.1.

Mitigation Measures for Badgers during Construction Stage

The mitigation measures described below follow the recommendations set out in the Guidelines for the Treatment of badgers during the Construction of National Road Schemes (National Roads Authority, 2006). These guidelines set out the best practice approach in considering and mitigating impacts on badgers during construction works.

As badger could potentially establish new setts in the future within the ZoI of the proposed development, a pre-construction check of all suitable habitat within the proposed development boundary will be required within 12 months of any constructions works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:

- Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage
- No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances
- During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts
- Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist

As the proposed development will not result in the permanent loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.

Mitigation Measures for Otter During Construction Stage

The mitigation measures as described above in Section 5.9.1.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on otter species.

Mitigation for Birds during Construction Stage

Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Mitigation for Amphibians during Construction Stage

Disturbance and Mortality Risk

If works to clear any of the habitat features suitable to support amphibian species are to begin during the season where frogspawn or tadpoles may be present (February – mid-summer), or where breeding adult newts, their eggs or larvae may be present

(mid-March – September), a pre-construction survey will be undertaken to determine whether breeding amphibians are present.

In the case of common frog, any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat by hand net and translocated to the nearest area of available suitable habitat beyond the ZoI of the proposed development by a suitably licensed individual.

In the case of smooth newt, individuals will be captured and removed from affected habitat either by hand net or by trapping and translocated to the nearest area of available suitable habitat, beyond the ZoI of the proposed development by a suitably licensed individual. If used, the type and design of traps shall be approved by the NPWS. This is a standard and proven method of catching and translocating smooth nest.

If the size or depth of the habitat feature is such that it cannot be determined whether all amphibians have been captured, it will be drained under the supervision of a suitably experienced ecologist to confirm that no amphibian species remain before it is destroyed or infilled. Any mechanical pumps used to drain the habitat feature will have a screen fitted, and be sited, such that no amphibian species can be sucked into the pump mechanism.

Any capture and translocation works shall be undertaken immediately in advance of site clearance/construction works commencing.

Protection of Water Quality

The mitigation measures as described above in Section 5.6.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on amphibians.

Mitigation Measures for White-clawed crayfish during construction stage

The mitigation measures as described above in Section 5.6.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on white-clawed crayfish.

Mitigation Measures for bats during Construction Stage

Measures to Protect Bats during the Removal of Roosts

The following mitigation measures are proposed in relation to trees identified as having potential to support roosting bats (Figure 5-8). Bats could occupy suitable roosting features at any time prior to the commencement of works, even where they have not previously been identified. Therefore, there is an inherent risk that bats could be affected by the proposed felling works. The following mitigation procedures will be followed:

- Trees will only be felled if confirmed that the potential roost features are clear of bats. A bat ecologist / arborist with training in pre-felling checks of tree cavities for bats will check each feature with a high-powered torch, mirror and/or

endoscope. Access may require use of a mobile elevated walking platform (MEWP), or by climbing the tree, which will be determined by health and safety considerations. In cases where PRFs cannot be safely accessed via MEWP or tree climbing, it may be necessary to confirm absence by way of night-time emergence/re-entry survey. Once the feature is declared free of bats, the tree can be felled.

- In the unlikely event that a bat is encountered in a PRF, then works to the relevant tree will cease. The bat ecologist will prepare a mitigation strategy and may need to prepare a derogation application.

Measures to Control and Reduce Light Spill During Construction

During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site shall be sensitive to the presence of bats in the area, downlighting, and time limited where possible. Lighting of sensitive wildlife areas and primary ecological corridors (e.g. along the central hedgerow/watercourse, and hedgerow boundaries of the site) and light pollution in general should be avoided.

Lighting of the site during construction is designed in accordance with the following guidance:

- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020)
- Guidance Note Bats and Artificial Lighting at Night GN08 (Institute of Lighting Professionals, 2023)
- Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

5.6.2 Operational Phase

Mitigation measures for habitat loss

The landscaping plan for the proposed development site includes for the replacement planting of hedgerows and trees throughout the site of native species to compensate for the loss of hedgerow within the site. In the case of the central hedgerow along the Cooldown watercourse, 186 linear metres of hedgerow habitat is to be lost across six separate sections. The landscape planting schedule will include for the planting of an additional 2070 m^2 of hedgerow habitat with 280 trees, thereby mitigating the loss of this habitat. While there will be some habitat loss in the short term during the construction phase of the proposed development, the planting schedule will result in an overall net gain for hedgerow habitat, and therefore the proposed development is not likely to result in a significant residual effect on these habitats, at any geographic scale,

Prevention of spread of invasive species during operation

The bulk importation of material from offsite could potentially result in the accidental spread of Third Schedule species, as it is uncertain if these site(s) are free from non-native invasive species. This is likely less an issue for road building material. However, in terms of landscaping, if soil is imported to the site for landscaping, infilling or embankments, the appointed contractor shall seek documentation from suppliers confirming that the material is free from invasive species.

Following the construction of the proposed development, there may be ongoing treatment programmes which extend for a number of years into the operational phase. Notwithstanding this fact, it is important that the proposed development site is systematically re-surveyed during its early operational phase, particularly around areas where management / eradication measures were enacted, to determine the success of control measures and to identify areas where invasive plants may be reinvading. This post-construction surveillance should be carried out for at least two years post completion (or as advised by the ISM contractor of all mitigation measures).

The above measures are important for all Third Schedule species, where they occur, as maintenance works associated with landscaping, such as mowing and hedge cutting have the potential to spread these species via the dispersal of very small amounts of plant material.

Mitigation Measures for Bats during Operation Stage

Any light spill affecting bat use of habitats outside of the proposed development boundary will be minimised, particularly along the boundaries of the site, and along the central boundary. Light levels during construction and operation in these areas will be maintained as close to baseline levels as is practicable.

Ecological input was provided to the lighting design, to ensure the sensitive siting and design of the lighting elements with respect to bats. This includes careful consideration of light placement on buildings, column heights and luminaire design. Luminaires have been selected which do not emit UV light (e.g. metal halide and fluorescent light sources have been avoided), and which are designed using full cut off. These will be mounted horizontally, with no tilt, to ensure there is no direct upward light.

Through the implementation of sensitive lighting design and the use of forward throw luminaires, lux levels on the eastern, western, and central hedgerows (with the exception of road/footpath crossing points) has been kept at or below 1.0 lumen.

5.6.3 Enhancement

The majority of native hedgerows and trees on site be found along the boundaries and central border between the two fields, have been retained wherever possible to ensure wildlife corridors and green infrastructure is maintained. The central hedgerow/treeline will also be enhanced by the addition of native tree species *Alnus glutinosa, Corylus avellana, Betula pubescens,* and *Ilex aquifolium*, with wetland/marginal species planted adjacent, including; *Filipendula ulmaria, Silene flos-cuculi, Argentina anserina*

and *Cardamine pratensis*[53], proposed in the stream area to be utilised as a swale. All planting within the site has been in specific regard to the 'All Ireland Pollinator Plan 2021-2025'. The riparian buffer zones along the Cooldown, Coldwater and Corbally streams will be maintained as no-mow zones to distinguish the riparian corridor from adjacent amenity areas. The total area within the riparian buffer zones within the proposed development site is 3.02 Ha. The Cooldown stream (i.e. the central watercourse) will be enhanced through the incorporation of boulders to provide some artificial sinuosity to create a more natural flow within the channel without excessive intervention. By improving the physical complexity and potentially adding more ecological niches, the interrelationship between green infrastructure, and biodiversity within the proposed development may be achieved and enhanced.

The planting of native trees including; *Quercus robur, Quercus petraea,* and *Alnus glutinosa* is proposed throughout the main open space areas and along the peripheries of the site, where they will mature into large, parkland specimens. The retention of existing trees, and planting of additional trees will screen the development from the habitats in the surrounding lands, and will ensure nocturnal species *e.g.* bats, badgers, small mammals, can continue to use the boundaries as foraging and/or commuting areas. Planting within the site of additional trees, hedgerows and shrubs will act as 'stepping stones', allowing fauna species to pass through the site from adjoining lands.

The introduction of wildflower planting within the open space areas in the north of the site will provide new habitat for the local wildlife, and will help increase biodiversity in the local area. This will extend the whole way along the eastern boundary alongside the Corbally Stream, where mature native trees are being retained and additional trees planted, which will act as canopy cover over the ground flora planting enhancing the area further to benefit pollinators, birds, bats, and small mammals.

5.6.4 "Worst Case" Scenario

The assessments carried out under sections 5.5.1 and 5.5.2 above are undertaken based on the design received and in the absence of mitigation. Therefore, this assessment represents the worst-case scenario of the Proposed Development prior to the inclusion of mitigation measures. In a general worst-case scenario for the Proposed Development site, all vegetation would be removed, and fauna would cease to use the lands over the long-term.

5.7 Residual Impacts

Following the implementation of the mitigation measures outlined in Section 5.9 above, the proposed development will not result in any significant residual effect on the Key Ecological Receptors identified (see Table 5-8 and Table 5-9) on its own, or cumulatively together with other proposed developments.

[53] Gannon & Associates Landscape Architecture (2025) *Landscape design rationale, Proposed Residential Development at Boherboy, Co. Dublin.*

5.7.1 Residual Effects for European Sites

Following an examination, analysis and evaluation of the best available information, and applying the precautionary principle, it can be concluded that the possibility of any significant effects on any European sites, whether arising from the project alone or in combination with other plans and projects, can be excluded, for the reasons set outlined in section 5.5 of this chapter, and in an Appropriate Assessment Screening report (Scott Cawley Ltd., 2025) accompanying this application. In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the Zone of Influence, and their conservation objectives, have been fully considered. Therefore, the Proposed Development is not likely to have significant residual effects on any European designated sites.

5.7.2 Residual Effects for Nationally designated sites

The assessment presented in section 5.5, concluded that there was no risk of the Proposed Development resulting in a likely significant effect on any nationally designated sites, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any nationally designated sites.

5.7.3 Residual Effects for Habitats

With regard to the KER habitats identified within the Proposed Development area, there will permanent loss of dry meadows and grassy verges, wet grassland and marsh habitat as well as a loss of sections of treeline and hedgerow habitats. However, the proposed marsh habitat relocation and creation, the retention of the majority of hedgerows and treelines, the extensive landscaping design (including tree planting and creation of wildflower meadows and no mow zones within the riparian buffer zone) and the mitigation strategy to protect trees to be retained, will minimise the impact of those effects on habitats over the medium to long--term. Although there will be a temporary impact during the construction phase until the proposed planting becomes established, the Proposed Development is not likely to result in long-term effects on habitats and will not result in a likely significant negative residual effect, at any geographic scale.

5.7.4 Residual Effects for Badger

The potential effects of the Proposed Development are considered in Section 5.5. Significant effects are not predicted with regards to badgers, and therefore residual effects for badgers are not deemed significant.

5.7.5 Residual Effects for Otter

The potential effects of the Proposed Development are considered in Section 5.5. However, assuming the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on otter at any geographical scale.

5.7.6 Residual Effects for Small Terrestrial Mammals

The potential effect of the Proposed Development on small terrestrial mammals is documented in section 5.5. Significant effects are not predicted with regards to small

terrestrial mammals, and therefore residual effects for small terrestrial mammals are not deemed significant.

5.7.7 Residual Effects for Breeding Birds

The potential effect of the Proposed Development on breeding birds is documented in section 5.5. However, assuming the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on breeding birds at any geographical scale.

5.7.8 Residual Effects for Bats

The potential effect of the Proposed Development on bats is documented in section 5.5. However, assuming the full and successful implementation of the mitigation measures outlined within this Chapter, no residual impacts are predicted on bats.

5.7.9 Residual Effects for Amphibians

The potential effect of the Proposed Development on amphibians is documented in section 5.5. However, assuming the full and successful implementation of the mitigation measures outlined within this Chapter, no residual impacts are predicted on amphibians.

5.7.10 Residual Effects for White-Clawed Crayfish

The potential effect of the Proposed Development on white-clawed crayfish is documented in section 5.5. However, assuming the full and successful implementation of the mitigation measures outlined within this Chapter, no residual impacts are predicted on white-clawed crayfish.

Table 5-10: Summary of the significant residual ecological effects of the proposed development

Ecological Receptor	Ecological Valuation	Impacts with Potentially Significant Effects	Potential Significance of Effects	Mitigation Measures	Significance of Residual Effects
Designated Sites					
Glenasmole Valley SAC	International	None	International	None	None
Wicklow Mountains SAC	International	None	International	None	None
South Dublin Bay SAC	International	None	International	None	None
North Dublin Bay SAC	International	None	None	None	None
Wicklow Mountains SPA	International	None	None	None	None

Poulaphouca Reservoir SPA	International	None	International	None	None
South Dublin Bay and River Tolka Estuaries SPA	International	None	International	None	None
North Bull Island SPA	International	None	International	None	None
Lugmore Glen pNHA	National	None	National	None	None
Slade of Saggart and Crooksling Glen pNHA	National	None	National	None	None
North Dublin Bay pNHA	National	None	National	None	None
South Dublin Bay pNHA	National	None	National	None	None
Booterstown Marsh pNHA	National	None	National	None	None
Habitats					
Dry meadows and grassy verges (GS2)	Local (High)	Permanent loss of habitat (c.0.2ha)	Local (High)	Measures to avoid the spread of non-native invasive species Meadow planting	None
Marsh (GM1)	Local (High)	Permanent loss of habitat (c.0.05ha)	Local (High)	Translocation of vegetation and habitat creation in the northern western corner of the site at a ration of greater than 1:1	None
Immature woodland (WS2)	Local (High)	Permanent loss of habitat (c. 0.2ha)	Local (High)	Native tree planting	None
Hedgerows (WL1)	Local (High)	Permanent loss of habitat (c. 321m)	Local (High)	Native hedgerow planting and bolstering of existing hedgerows Protection from dust emissions and construction activities by dust screens and fencing	None

Treelines (WL2)	Local (High)	Permanent loss of habitat (c. 538m)	Local (High)	Native tree planting Protection from dust emissions and construction activities by dust screens and fencing	None
Depositing/lowland Rivers (FW2)	Local (High)	Permanent loss of habitat (c. 30m) Effects on water quality changes in local aquatic habitats	Local (High)	Measures to protect surface waters in the receiving environment during construction. Maintenance of a riparian buffer zone and planting appropriate to a riparian zone Inclusion of small boulders to increase sinuosity and create habitats within the site's central watercourse	None
Fauna Species					
Badger	Local (High)	Injury or mortality arising from construction	Local (high)	Pre-construction checks for new setts	None
Otter	County	Habitat degradation as a result of a change in water quality	Local (High)	Measures to protect surface waters in the receiving environment during construction	None
Birds	Local (high)	Disturbance and mortality during breeding season Habitat loss	Local (high)	Seasonal vegetation clearance Landscape planting	None
Amphibians	Local (high)	Disturbance and mortality Habitat degradation as a result of a change in water quality	Local (High)	Pre-construction checks of water bodies Translocation of individuals	None

White-clawed crayfish	Local (High)	Habitat degradation as a result of a change in water quality	Local (High)	Measures to protect surface waters in the receiving environment during construction	None
Bats	Local (High)	Disturbance and mortality Increased light levels	Local (high)	Roost presence/absence surveys prior to demolition of structures/felling of suitable bat roost trees Soft felling of suitable bat roost trees Directional lighting to control light spill	None

5.8 Monitoring

5.8.1 Construction Phase

A suitably experienced and qualified Ecological Clerk of Works (ECoW) will be retained by the appointed contractor. The ECoW will advise the appointed contractor on ecological matters during construction, undertake preconstruction surveys as necessary, communicate all findings in a timely manner to the appointed contractor and statutory authorities, acquire any licenses / consents required to conduct the work, and supervise and direct the ecological measures associated with the Proposed Scheme. Pre-construction checks for PRFs, invasive species, amphibians, breeding birds and badger will be carried out as described in the respective sections above.

5.8.2 Operational Phase

Post installation monitoring of any bat boxes that are installed as part of the mitigation measures outlined in Section 5.6.1 will be carried out to determine the efficacy of this measure. These checks will be undertaken in years 1, 3 and 5 post construction with a memo provided to the client following each check.

Post-construction monitoring for invasive species will be carried out for at least two years post completion, as outlined above.

Hydrocarbon interceptors installed as part of the SuDS features will be regularly inspected, cleaned, and professionally serviced to prevent pollution to the downstream environment.

Monitoring of the receptor site for Marsh habitat will be carried out by a suitably qualified and experienced ecologist pre-compensation, during and post-compensation as described in Marsh Translocation Report in order to:

- Ensure that potential issues that may deter the success of the compensation are identified at an early stage and addressed through adaptive management measures; and
- Determine the overall success of the habitat compensation.

Adaptive management measures will be targeted to address the specific issues identified by the monitoring and may be varied. For example, they could include translocation of additional turves to replace those that have failed, and/or additional seeding where this is deemed necessary to improve vegetation cover/presence.

This area of habitat should be monitored in years 1, 3 and 5 post-construction by a suitably qualified and experienced ecologist to monitor habitat quality, species richness, as well as potential scrub encroachment and invasive species spread/colonisation.

5.9 Interactions

Biodiversity interacts with several environmental factors including land and soils, hydrology, air quality, climate and microclimate and, noise and vibrations Chapters of the EIAR. Changes to these environmental factors could result in significant impacts on biodiversity such as the following:

5.9.1 Land & soils

Interactions between soils & land and biodiversity can occur through the spread of any hazardous material/contaminated land which may occur during the construction stage. The spread of land contaminated with potentially hazardous material could result in habitat degradation of habitats within the Proposed Development site and adjacent/downstream designated sites and their associated qualifying interests. Following the implementation measures outlined within the Construction Environmental Management Plan (CEMP) impacts to habitats, flora and fauna from soils and land interactions are not predicted to be significant.

5.9.2 Hydrology

Interactions between hydrology and biodiversity including habitats, flora and fauna can occur through impacts to water quality either arising from an accidental pollution event or increased sedimentation during the construction stage or an accidental pollution event during the operational stage. This interaction has the potential to result in significant impacts on hydrologically connected habitats and sensitive fauna that rely on these habitats.

5.9.3 Air Quality

Interactions between air quality and flora and fauna in adjacent habitats and designated sites can occur during the construction stage due to dust emissions arising from construction works. This interaction has the potential to result in significant impacts on biodiversity. However, once the dust minimisation measures outlined in the CEMP accompanying this report are implemented, impacts to flora and fauna are not predicted to be significant.

5.9.4 Noise & vibrations

Interactions between noise and sensitive fauna, namely birds, bats and badgers can occur and arise from increased noise levels during the construction stage. This interaction has the potential to result in significant impacts and has been assessed when considering disturbance impacts during construction. However, for reasons outlined in the relevant sections above (i.e. 5.5) impacts to fauna from noise interactions are not predicted to be significant.

5.10 Difficulties Encountered When Compiling

Wintering bird surveys were not undertaken for the 2024-2025 season. However, habitat surveys undertaken in December 2024 and April 2025 show that there has been no significant change in the habitats present on the site. Therefore, the likelihood is that there has been no significant change in the ecological baseline for wintering bird species. Furthermore, survey results from wintering bird surveys undertaken between September and November 2025 show no significant change to the wintering bird baseline for the proposed development site. Therefore, the absence of these surveys does not pose any limitations to the survey results and assessment of potential impacts to Key Ecological Receptors from the proposed development.

5.11 Conclusion

The proposed development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European site, either alone or in combination with any other plans or projects.

The proposed development does not have the potential to result in significant negative effects on nationally designated areas for nature conservation, either alone or cumulatively, with any other plans or projects.

The proposed development has the potential to affect the surface water quality or the ecology of the adjacent waterbodies during construction. The surface water systems are designed in accordance with the principles of SuDS as recommended in the Greater Dublin Strategic Drainage Study. The implementation of mitigation measures in Section 6 to avoid or minimise the effect of the proposed development with regard to water quality impacts, will ensure there is no significant effects on the local water quality.

The proposed development will result in some temporary habitat loss within the proposed development boundary, but this will not result in any significant negative effects following the implementation of mitigation and enhancement measures such as planting and strengthening existing treelines and hedgerows, as detailed in this report. The landscape design will ensure that the biodiversity value of the habitats to be retained and created as part of the proposed development, are maximised.

The proposed development does have the potential to result in significant negative effects on habitats, birds, white-clawed crayfish, amphibians and bats at local

geographic levels and on otter at a county geographic scale prior to mitigation. Following the implementation of mitigation measures, no residual impacts on any key ecological receptors is predicted.

A comprehensive suite of mitigation measures are proposed, some which have been incorporated into the design of the proposed development. All of the mitigation measures will be implemented in full and are best practice, tried and tested, and effective control measures to protect biodiversity and the receiving environment. All mitigation measures included within this report must be committed to and delivered through the planning conditions.

Considering the elements included within the design of the proposed development (as described in Section 5.4 and 5.5), and the implementation of the mitigation measures proposed in Section 5.6 to avoid or minimise the effects of the proposed development on the receiving ecological environment, no significant residual ecological effects are predicted, either alone or cumulatively with any other projects. The proposed development complies with relevant biodiversity policies of the South Dublin County Development Plan 2022-2028 (South Dublin County Council, 2022) considered in this report.

5.12 References

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6 LAND, SOILS AND GEOLOGY

6.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the land, soils and geology within and immediately surrounding the site of the Proposed Development and an assessment of the potential effects of the Proposed Development on the receiving land, soils and geology and sets out any required mitigation measures where appropriate.

The principal objectives of this chapter are to identify:

- Land, soils, and geological characteristics of the receiving environment at the site.
- Potential effects that the Proposed Development may have on land, soils and geology including “worst case” scenario assessment.
- Potential constraints that the environmental attributes may place on the Proposed Development.
- Required mitigation measures which may be necessary to minimise any adverse effects related to the Proposed Development.
- Evaluate the significance of any residual effects.

This chapter of the EIAR should be read in conjunction with Chapter 4 Population and Human Health, Chapter 5 Biodiversity, Chapter 7 Hydrology and Hydrogeology, Chapter 8 Air Quality, Chapter 11 Landscape and Visual Effect, Chapter 13 Material Assets: Waste and Utilities and Chapter 14 Material Assets: Traffic and Transport of the EIAR and other information provided by the Applicant pertaining to the design proposals for the Proposed Development.

6.1.1 Quality Assurance and Competency of Experts

The chapter was prepared by Gareth Carroll BA BEng MIEnvSc CEnv, a Principal Consultant of DNV. Gareth, a Chartered Environmentalist with the Institute of Environmental Sciences (CEnv) and over 13 years’ experience in environmental assessment of brownfield and greenfield sites for a range of project types and geological and hydrogeological site settings and is professionally competent and accredited to undertake environmental effect assessments.

The chapter was reviewed and approved by Patrick Higgins BSc, MSc, MIEnvSc CEnv who is a Technical Director with DNV, with over 20 years’ experience in environmental consultancy. Patrick brings extensive expertise in the preparation and evaluation of environmental assessments. He is professionally accredited and recognised as competent to undertake Environmental Impact Assessments (EIAs), ensuring that the content of this chapter meets the highest standards of technical accuracy and regulatory compliance.

6.2 Study Methodology

6.2.1 Relevant Legislation and Guidance

The methodology adopted for the assessment will take cognisance of relevant guidelines, in particular the following:

- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022).
- Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Effect Statements, A Guide (IGI, 2002).
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Effect Statements (IGI, 2013).
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009.
- South Dublin County Council (SDCC, 2022). South Dublin County Development Plan 2022-2028.

6.2.2 Consultation

A pre-planning meeting was held between the applicant's design team and South Dublin County Council (SDCC) on the 14th of August 2024. It was noted by SDCC that there were areas of marsh habitat on site that required resurvey during the appropriate season, and that a detailed analysis of the site's underlying geology, soils and hydrogeology were needed to understand the hydrological conditions that had allowed for the development of this habitat on site.

A second pre-planning meeting was held between the applicant's design team and SDCC on the 20th of May 2025. Clarification was sought on the site's ecological assessment and the viability of the proposed translocation of marsh habitat. It was noted that the marsh translocation proposal must be supported by clear ecological justification and design evidence demonstrating long-term habitat sustainability.

An Opinion Report following the second pre-planning meeting was received on the 17th of June 2025. While the report did not identify any specific issues relating directly to land, soils, or geology, consideration has been given to aspects of hydrogeology that may be relevant to this chapter of the EIAR.

6.2.3 Phased Approach

A phased approach was adopted for this EIAR in accordance with the Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An assessment and effect determination stage was carried out by DNV to establish the project location, type and scale of the development, the baseline conditions, and the type of land, soils and geological environment, to establish the activities associated with the Proposed Development. This element of the assessment also included developing the Conceptual Site Model (CSM) for the site and receiving environment. A CSM represents the characteristics of the site and identifies the possible relationship and potential risk between contaminant sources (i.e., characteristics of the proposed development), pathways (i.e., transport route or means by which a receptor can be exposed to) and receptors (receiving environment). The term pollutant linkage is used to describe a particular combination of source-pathway-receptor (SPR). Each of these elements can exist independently, but they create a risk only where they are linked together so that a particular contaminant affects a particular receptor through a particular pathway (i.e., a pollutant linkage).

The study area, for the purposes of assessing the baseline conditions for the Land, Soils and Geology Chapter of the EIAR, extends beyond the site boundaries and includes potential receptors with which there may be a pathway to/from the Proposed Development and receptors that may be indirectly affected by the Proposed Development. The extent of the wider study area was based on the IGI, 2013 Guidelines which recommend a minimum distance of 2.0km from the site.

The study area for the Land, Soils, and Geology Chapter of the EIAR is defined to ensure a comprehensive assessment of baseline conditions. This area extends beyond the immediate boundaries of the site of the Proposed Development to include a broader region. The site refers specifically to the land where the Proposed Development will take place. In contrast, the study area encompasses a wider region, extending at least 2.0 km from the site, as recommended by the Institute of Geologists of Ireland (IGI) 2013 Guidelines. This broader area is necessary to identify and evaluate all potential receptors that could be affected by the Proposed Development, either directly or indirectly. The distinction between the application site and the study area is crucial. The site of the Proposed Development is the focal point of the Proposed Development, while the study area includes additional regions that might experience secondary effects. For instance, potential receptors within the study area include surrounding land that might undergo changes in land use or quality, soil quality and composition that could be altered by construction activities and underlying geological features that might be affected.

The justification for this wider study area lies in the need to capture all potential effects comprehensively. While the primary focus is on the application site, the broader study area ensures that any indirect or secondary effects on land, soil, and geology are also considered. This approach provides a detailed and accurate picture of how the Proposed Development might affect these aspects of the environment, helping stakeholders make informed decisions and ensuring that all potential environmental effects are thoroughly assessed.

The desk study, undertaken for the preparation of the soils and geology chapter of this EIAR, involved collecting all the relevant data for the Proposed Development site and surrounding area including published information and details pertaining to the Proposed Development provided by the applicant and design team.

A site walkover survey to establish the environmental site setting and baseline conditions at the site relevant to the land, soil and geological environment was undertaken by DNV on the 28th of January 2025.

The Element 1 stage of the assessment was completed by DNV and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping 2025 (EPA, 2025).
- Geological Survey of Ireland (GSI) Datasets Public Viewer and Groundwater webmapping, 2025 (GSI, 2025).
- Google Earth Mapping and Imagery, 2025 (Google Earth, 2025).
- Ordnance Survey Ireland (OSI) webmapping, 2025 (OSI, 2025).
- National Parks and Wildlife Services (NPWS) webmapping, 2025 (NPWS, 2025).
- Teagasc webmapping, 2025 (Teagasc, 2025).
- Information provided by the Applicant pertaining to the design proposals for the Proposed Development.

Other documents and reports reviewed as part of this assessment included the following:

- Ground Investigations Ireland (GII), 2014. Ground Investigation Report (appended to the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover).
- DNV, 2025a. Construction Environmental Management Plan (submitted with the planning application under separate cover).
- DNV, 2025b. Resource and Waste Management Plan (submitted with the planning application under separate cover).

Element 2: Involves direct and indirect site investigation and studies stage where necessary to refine the CSM developed as part of Element 1 and evaluate the potential effects associated with the Proposed Development.

Intrusive site investigations were undertaken by Priority Geotechnical Ltd. (PGL, 2025; refer to the Hydrogeological Risk Assessment (HRA) prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1) between the 23rd and 25th of June 2025 which included borehole drilling and installation of five (5 No.) groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5). The soils encountered at each borehole location were logged by PGL's Geotechnical Engineer in accordance with BS 5930:2015+A1:2020 Code of Practice for Ground Investigations and BS10175:2011+A2:2017 – Investigation of Potentially Contaminated Sites. Code of Practice. Visual and olfactory observations were also recorded by DNV.

Element 3: Evaluation of Mitigation Measures, Residual Effects and Final Effect Assessment were based on the outcome of the information gathered in Element 1 and Element 2 of the assessment. Mitigation measures to address all identified adverse effects that were identified in Element 1 and Element 2 of the assessment were considered in relation to the construction phase and operational phase of the Proposed Development. These mitigation measures were then considered in the effect assessment to identify any residual effects.

Element 4: Completion of the Land, Soil and Geology sections of the EIAR in this Chapter which includes all the associated figures and documents.

6.2.4 Description of Importance of the Receiving Environment

The Transport Infrastructure Ireland (TII) criteria for rating of the importance of geological features at the site as documented in the National Roads Authority Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009), are summarised in Table 6-1.

Table 6-1. Criteria for Rating Site Importance of Geological Features

Importance	Criteria	Typical Example
Very High	Attribute has a high quality, significance, or value on a regional or national scale. Degree or extent of soil contamination is significant on a national or regional scale. Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA). Large existing quarry or pit. Proven economically extractable mineral resource.

Importance	Criteria	Typical Example
High	Attribute has a high quality, significance, or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale.	Contaminated soil on-site with previous heavy industrial usage. Large recent landfill site for mixed wastes. Geological feature of high value on a local scale (County Geological Site). Well drained and/or high fertility soils. Moderately sized existing quarry or pit. Marginally economic extractable mineral resource.
Medium	Attribute has a medium quality, significance, or value on a local scale. Degree or extent of soil contamination is moderate on a local scale. Volume of peat and/or soft organic soil underlying route is moderate on a local scale.	Contaminated soil on-site with previous light industrial usage. Small recent landfill site for mixed wastes. Moderately drained and/or moderate fertility soils. Small existing quarry or pit. Sub-economic extractable mineral resource.
Low	Attribute has a low quality, significance, or value on a local scale. Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale.	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

6.2.5 Description and Assessment of Potential Effect

Effects will vary in quality from negative, to neutral or positive. The impact of effects will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'effect' significance and the corresponding 'effect' throughout this chapter is described in Table 6-2 in accordance with EPA, 2022 guidelines on the information to be contained in EIARs.

Table 6-2. Assessment of Potential Terminology and Methodology

Quality of Effects/Effects	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Effects	**Definition**
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.

Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Extend and Context of Effects	**Definition**
Extend	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe weather the extent, duration or frequency will conform or contrast with established (baseline) conditions
Probability of Effects	**Definition**
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration of Effects / Effects	**Definition**
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

Types of Effects	Definition
Indirect Effects	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
Cumulative Effects	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
“Do-nothing” Effects	The environment as it would be in the future should the subject project not be carried out
“Worst-case” Effects	he effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Figure 6-1 identifies how comparing the character of the predicted effect to the sensitivity of the receiving environment can determine the significance of the effect.

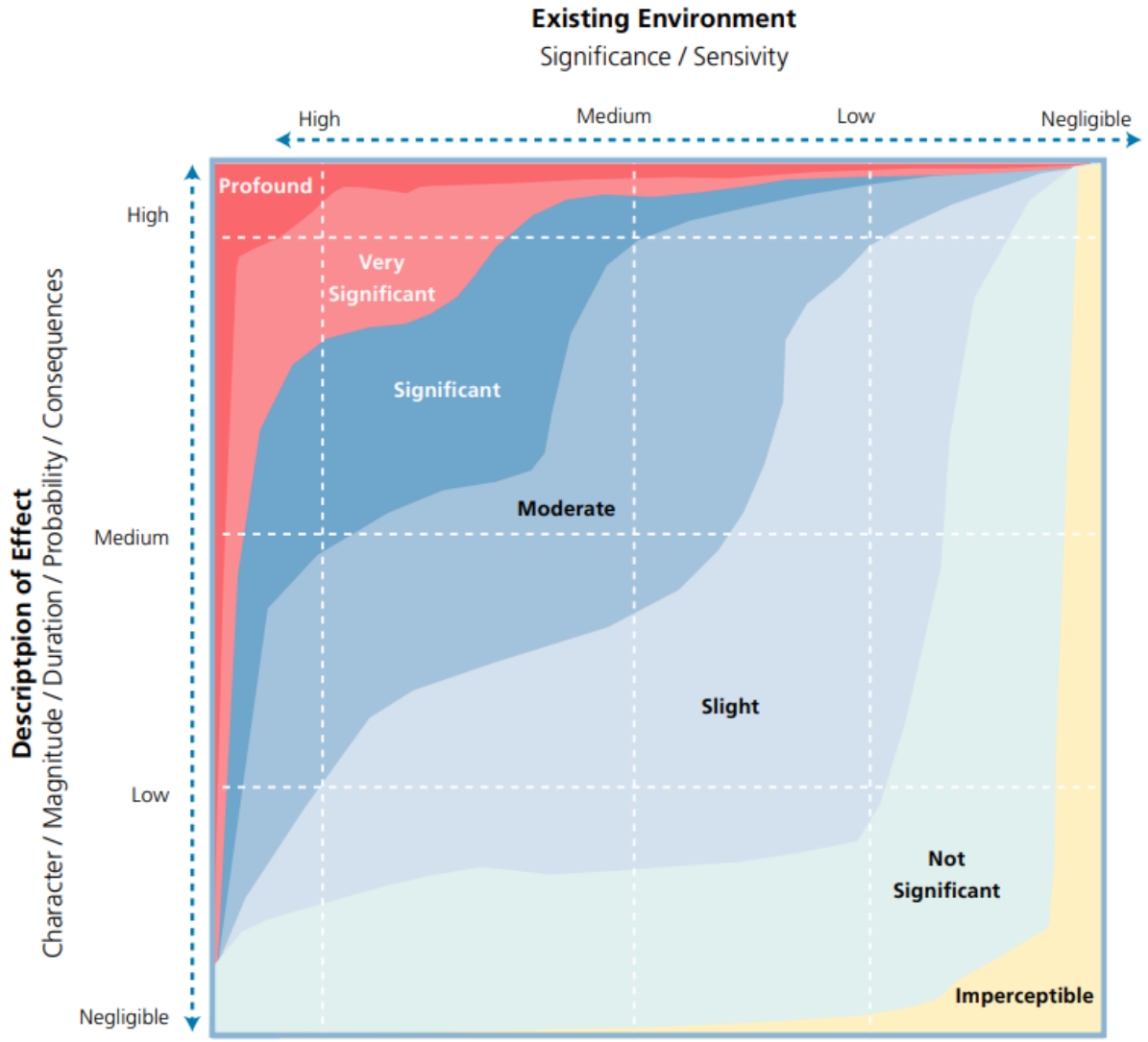

Figure 6-1. Determining Significance

6.3 The Existing and Receiving Environment (Baseline Situation)

6.3.1 Site Location and Description

The site is located to the north of Boherboy Road, approximately 2 km south-west of Tallaght Town Centre, 1 km east of Saggart, 700 m south-west of Citywest Shopping Centre, and 1.6 km south of the N7.

The site comprises approximately 18.7 hectares (Ha) of primarily undeveloped agricultural lands. The lands comprise of two agricultural grassland fields which are separated by a hedgerow and stream. There are three (3 No.) overhead power lines crossing the site (10kV-38kV). The Corbally stream runs along much of the eastern and southern boundary of the site. The Coldwater stream flows along the western boundary, and the Cooldown stream is noted along the central field boundary on the site. The site also comprises a small area of disused grassland, located to the east of the Corbally Stream. Hedgerows and treelines surround the lands. Cattle graze on the agricultural fields, with open cow sheds in the south of the site, adjacent to the entrance.

The land is bound by the Boherboy Road (L2008) to the south, agricultural fields and a single dwelling to the west, Carrigmore residential estate to the north and Corbally residential estate and Carrigmore Park to the east.

The Site location is presented in Figure 2-1 and the current layout of the site is presented in Figure 2-2.

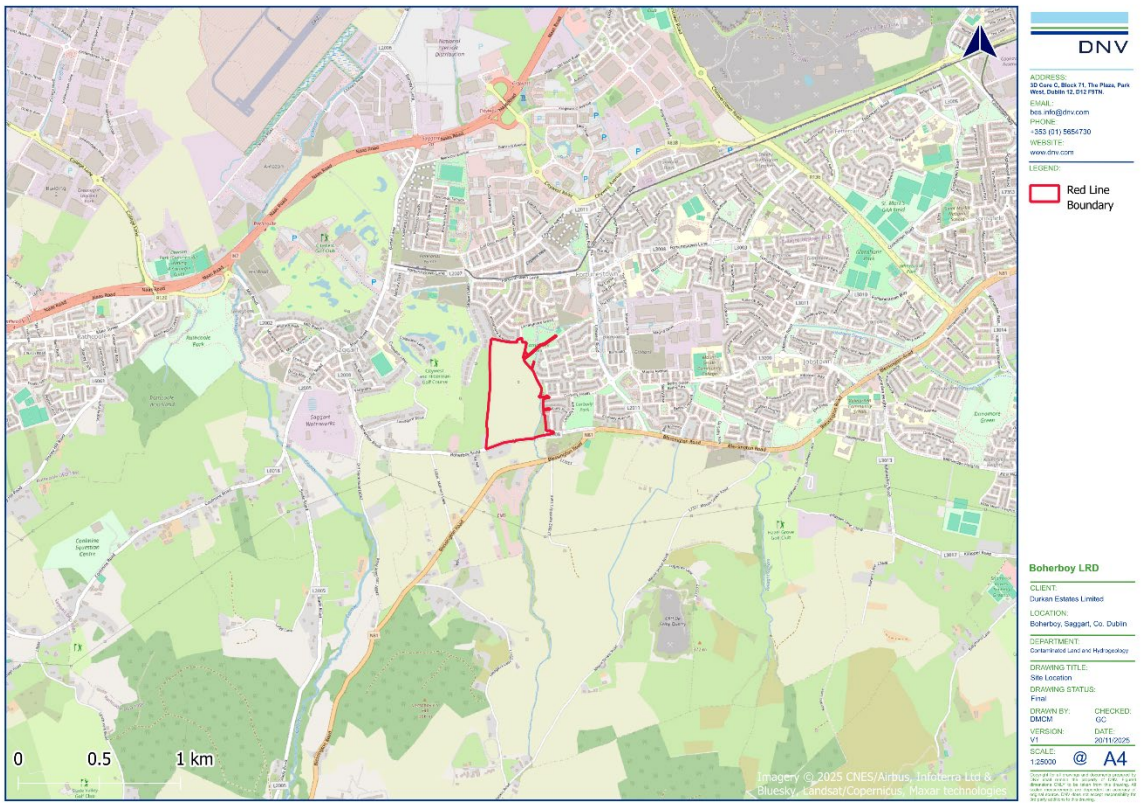

Figure 6-2. Site Location

Figure 6-3. Existing Site Layout

6.3.2 Topography

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025; submitted with the planning application under separate cover), a topographical survey was carried out on the site and indicates that the lands slopes sharply downwards from the south end of the site towards the north. The existing ground level gradients range from 1/7 to 1/30 generally. There is an approximate drop in level of 38m from the highest portion (SW) of the site to the lowest point (NW).

The existing ground topography forms a natural catchment with approximately 75% of the site draining towards the north-west and the remainder draining towards the north-east of the lands. All catchments drain to existing natural watercourses either side of the site.

The existing topography is presented in Figure 6-4.

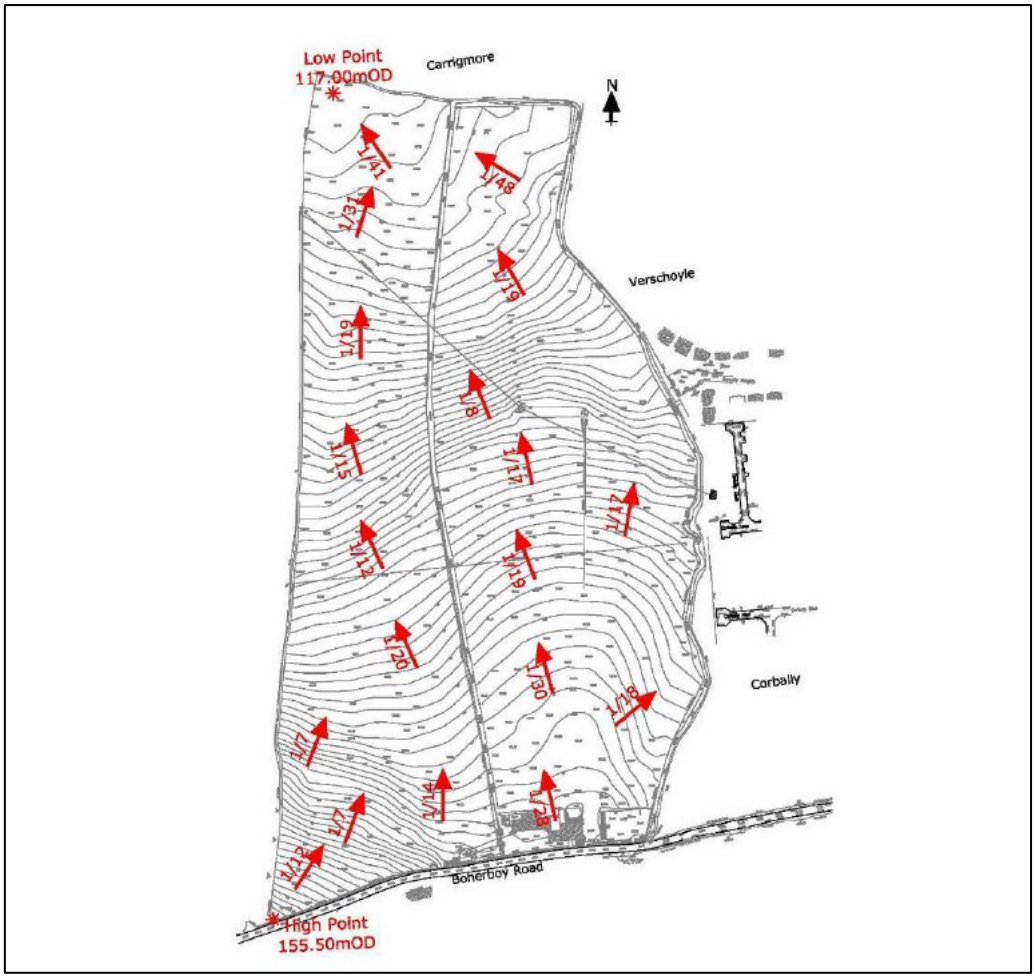

Figure 6-4. Existing Topography (Extract from Roger Mullarkey & Associates, 2025. Drainage and Water Infrastructure Engineering Report)

6.3.3 Soil

The soils beneath the site are mapped by Teagasc (Teagasc, 2025) as deep well drained mineral (mainly acidic), Acid Brown Earths, Brown Podzolics (IFS Soil Code: AminDW) derived from mainly non-calcareous parent materials described as till derived chiefly from Lower Palaeozoic rocks (sandstone and shale till – TLPSsS).

The underlying soils are presented in Figure 6-5.

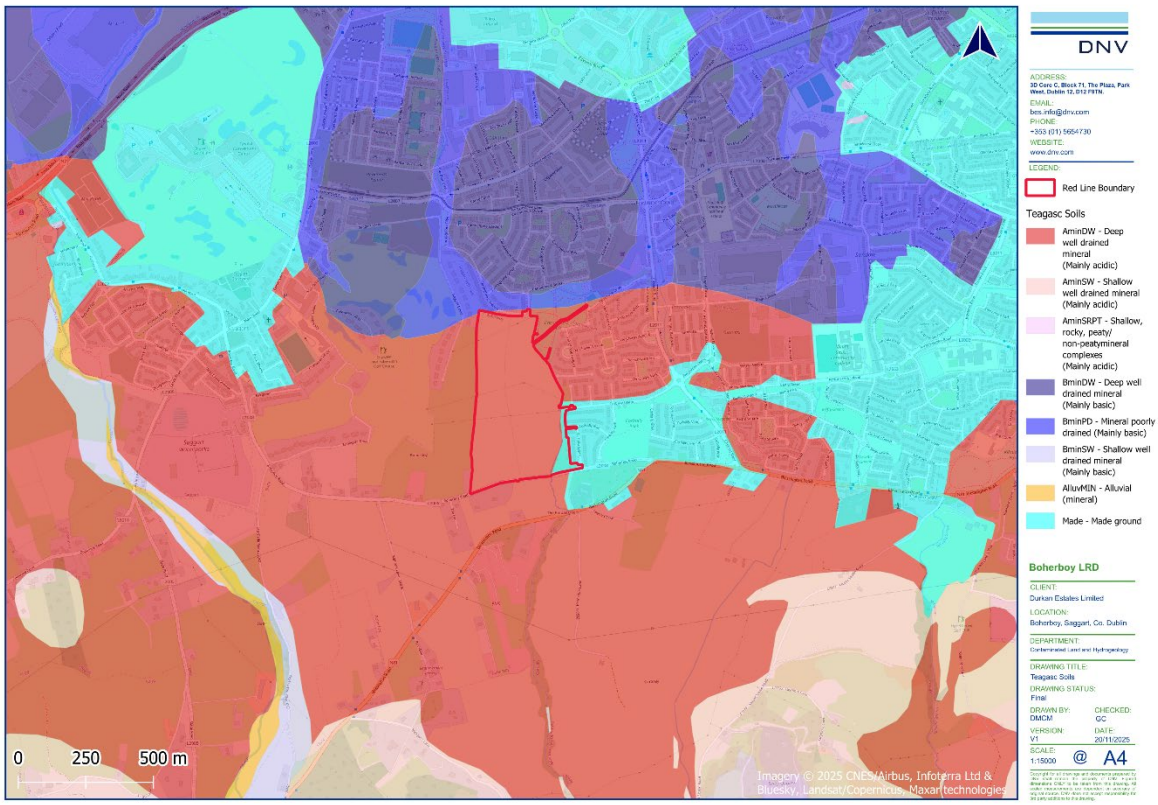

Figure 6-5. Teagasc Soils

6.3.4 Quaternary Sediments

The subsoil or quaternary sediments beneath the majority of the site are mapped by the GSI (GSI, 2025) as till derived from limestones (TLs). While the subsoil beneath a small portion within the southern boundary of the site is mapped by the GSI (GSI, 2025) as till derived from Lower Palaeozoic sandstones and shales (TLPSsS).

The GSI (GSI, 2025) has assigned a ‘Moderate’ permeability rating to the subsoils beneath the site.

The underlying subsoil or quaternary sediments are presented in Figure 6-6.

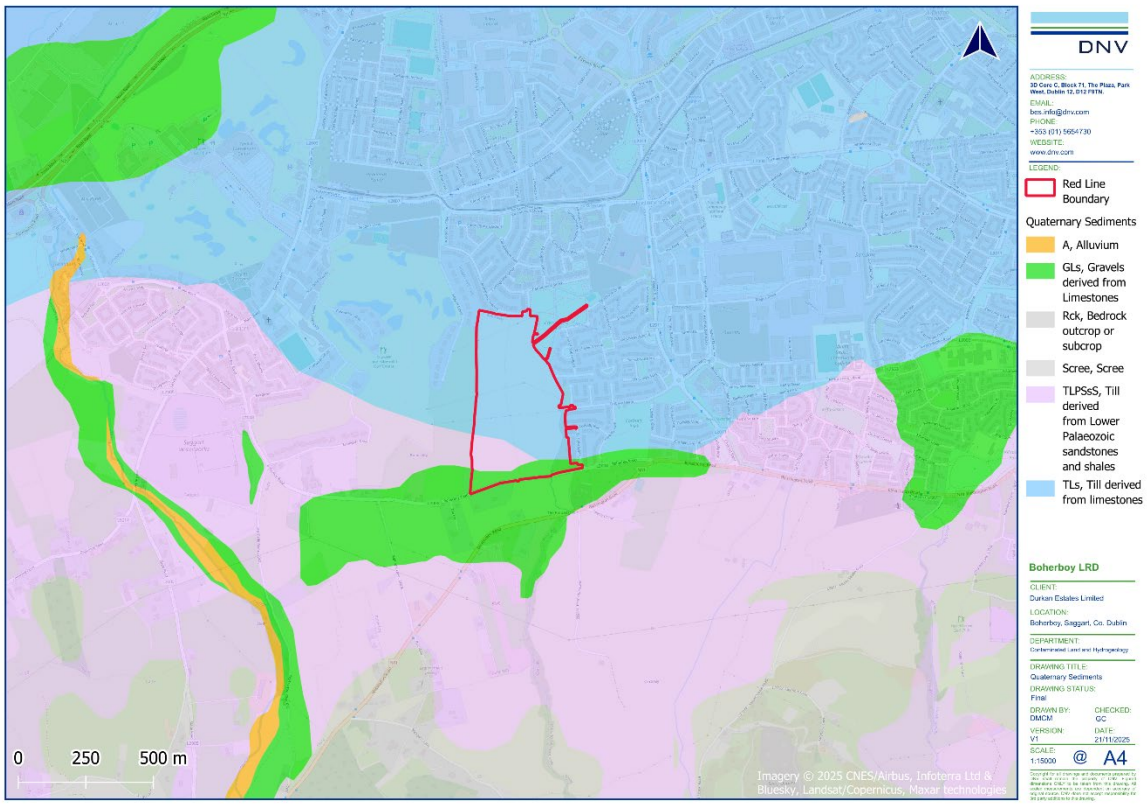

Figure 6-6. Subsoil or Quaternary Sediments

6.3.5 Quaternary Geomorphology

The GSI (GSI, 2025) has identified one (1 No.) Glaciofluvial Terraces (ice-marginal landform), namely the Cammock River System (IE_GSI_GL_deglacial_50K_2645), approximately 0.81km west / southwest of the site.

One (1No.) Striae (IE_GSI_GL_SGstriae_50K_1387), oriented in a northwest to southeast direction is identified by the GSI (GSI, 2025) approximately 1.65km southeast of the site.

6.3.6 Bedrock Geology

The bedrock beneath the majority of the site is mapped by the GSI (GSI, 2024) as the Pollaphuca Formation (code SLPLPH) described as coarse greywacke & shale. The bedrock beneath the most northern portion of the site is classified as the Lucan Formation (code CDLUCN) which is made up of dark limestone and shale (‘calp).

The underlying bedrock geology is presented in Figure 6-7.

While no bedrock outcrops are mapped within the site boundary, a cluster of bedrock outcrops is located approximately 1.08km south of the site (GSI, 2025).

There are no karst features mapped by the GSI (GSI, 2024) at the Site or within a 2km radius of the site.

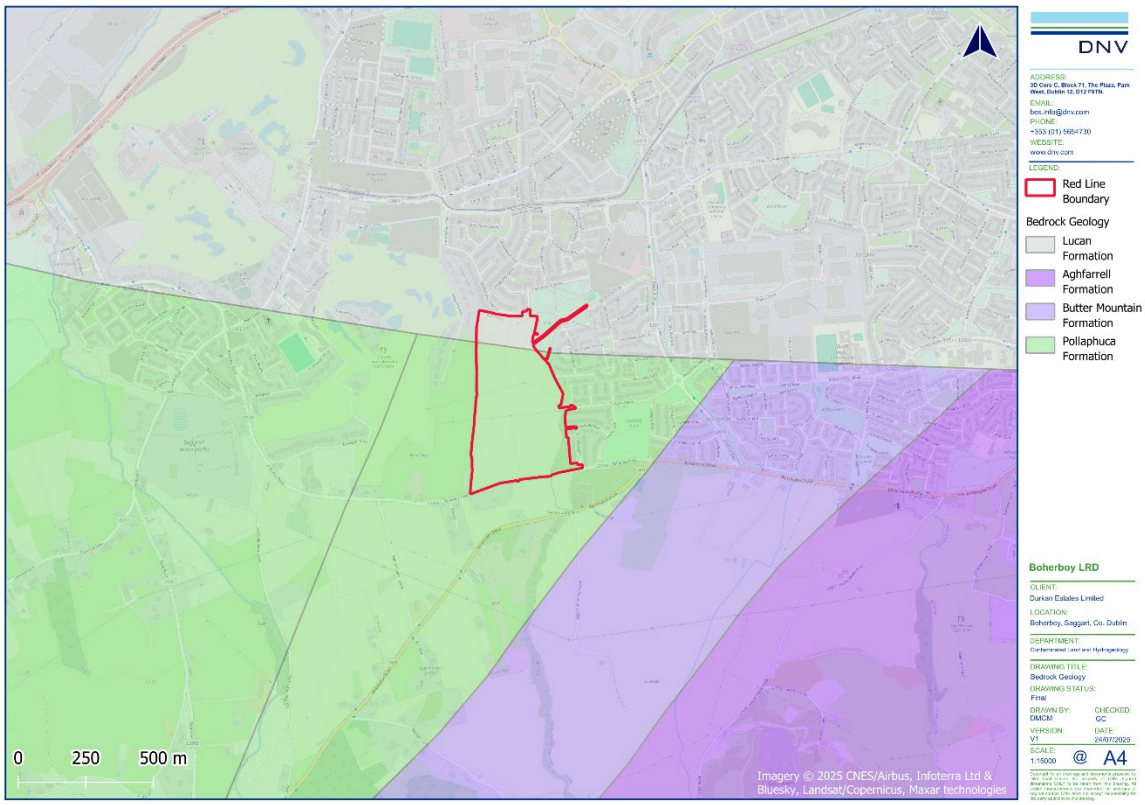

Figure 6-7. Bedrock Geology

6.3.7 Site Investigation Results

6.3.7.1 GII, 2014 Ground Investigation Report

A site investigation was carried out at the site by GII between the 9th and 12th of December 2013 (GII, 2014; appended to the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover).

The scope of the site investigation works consisted of the following:

- Eight (8No.) trial pits excavated to a maximum depth of 3.5mbGL).
- Six (6No.) slit trenches excavated to a maximum depth of 2.5mbGL.
- Nine (9No.) dynamic probes to a maximum depth of 3.3mbGL.
- Four (4No.) soakaway tests to BRE Digest 365.
- Geotechnical and Environmental Laboratory testing.

The site investigation locations are presented in Figure 6-8.

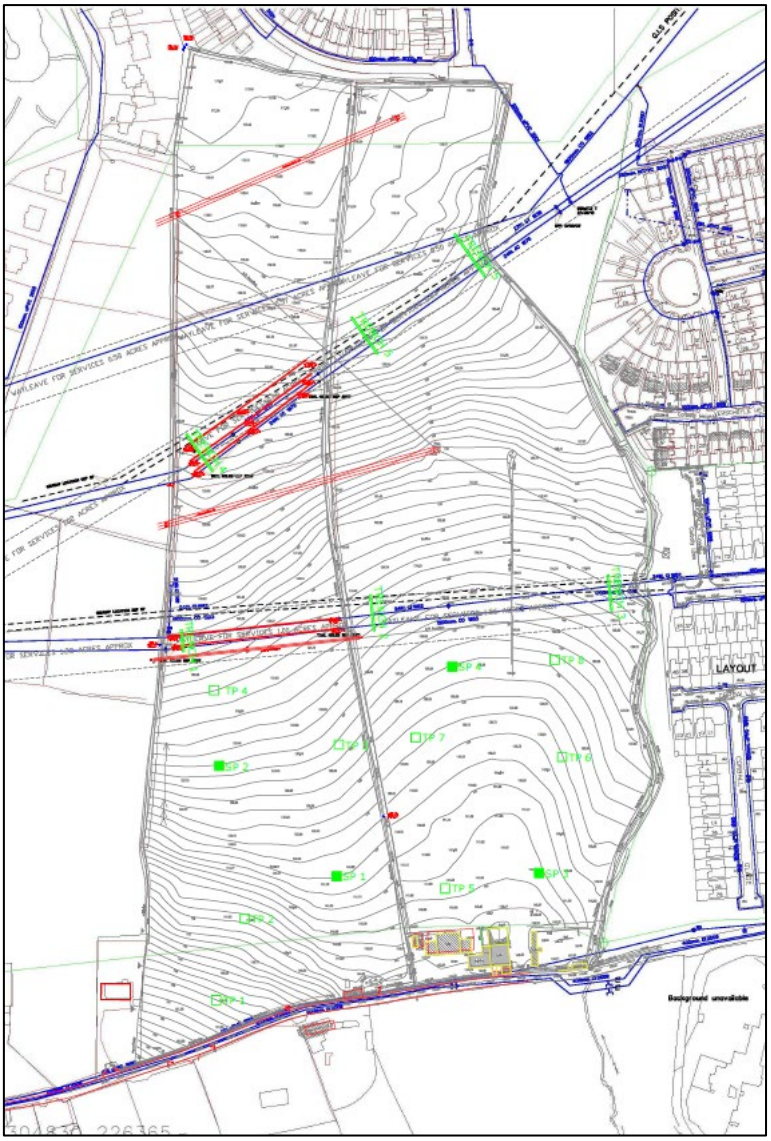

Figure 6-8. Site Investigation Locations (Extract from GII, 2014)

6.3.7.1.1 Ground Conditions

The ground conditions encountered at the site are summarised as follows:

- **Topsoil** – encountered to a maximum depth of 0.3mbGL mainly in all site investigation locations.
- **Cohesive Deposits** – encountered beneath the topsoil and described mainly as brown, grey-brown or occasionally as black, slightly sandy, slightly gravelly, CLAY, slightly gravelly, sandy, CLAY/SILT, laminated sandy, SILT and sandy, gravelly, slightly organic CLAY. These deposits generally ranged from soft or soft to firm at willow depths increasing to stiff or stiff to very still at the base of the majority of the trial pits. Occasional cobbles and rare boulder content were also noted during the excavation of the trial pits.
- **Granular Deposits** – generally described as brown or dark grey, gravelly, fine to coarse, SAND and clayey, sandy, subangular to subrounded fine to coarse GRAVEL. These deposits were encountered in the south of the site either in lenses within the cohesive deposits or as a layer beneath the cohesive deposits at the base of the trial pits. Occasional cobbles and rare boulder content were also noted.
- Bedrock was not encountered during site investigation works.

The geotechnical classification of the soil samples demonstrated that the primary constituent is CLAY for the cohesive deposits of low and intermediate plasticity with variable content of silt, sand and gravel. The granular deposits (glacial till) were well-graded with a high content of fine material.

Groundwater strikes were recorded at depths ranging between 2.0mbGL and 3.0mbGL as slow seepages (GII, 2014).

6.3.7.1.2 Laboratory Analytical Results

As documented in the site investigation report (GII, 2014), a total of four (4No.) soil samples collected were analysed for a suite of parameters suitable to determine the suitability of soils for disposal to a landfill. Soil analytical data for soil samples collected across the site are provided in the in the site investigation report (GII, 2014) appended the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover.

Based on the soil and soil leachate analysis results, all four (4No.) samples were reported to meet the waste acceptance criteria (WAC) for inert landfills as stipulated in the European Landfill Directive (Council Directive 1999/31/EC of 26 April 1999). It is noted that the samples were not classified as hazardous or non-hazardous in accordance with EPA guidance 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (EPA, 2018).

Based on a review of the results, there is no evidence of anthropogenic contamination in sampled soils:

The reported concentration of benzene, toluene, ethylbenzene, m/p-xylene and o-xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs), mineral oil, Polychlorinated Biphenyl (PCBs) were less than the Limit of Detection (LOD).

6.3.7.2 DNV, 2025 Hydrogeological Assessment

Intrusive site investigations were undertaken by Priority Geotechnical Ltd. (refer to the HRA prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1) between the 23rd and 25th of June 2025 which included borehole drilling and installation of five (5 No.) groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5).

The site investigation locations are presented in Figure 6-9.

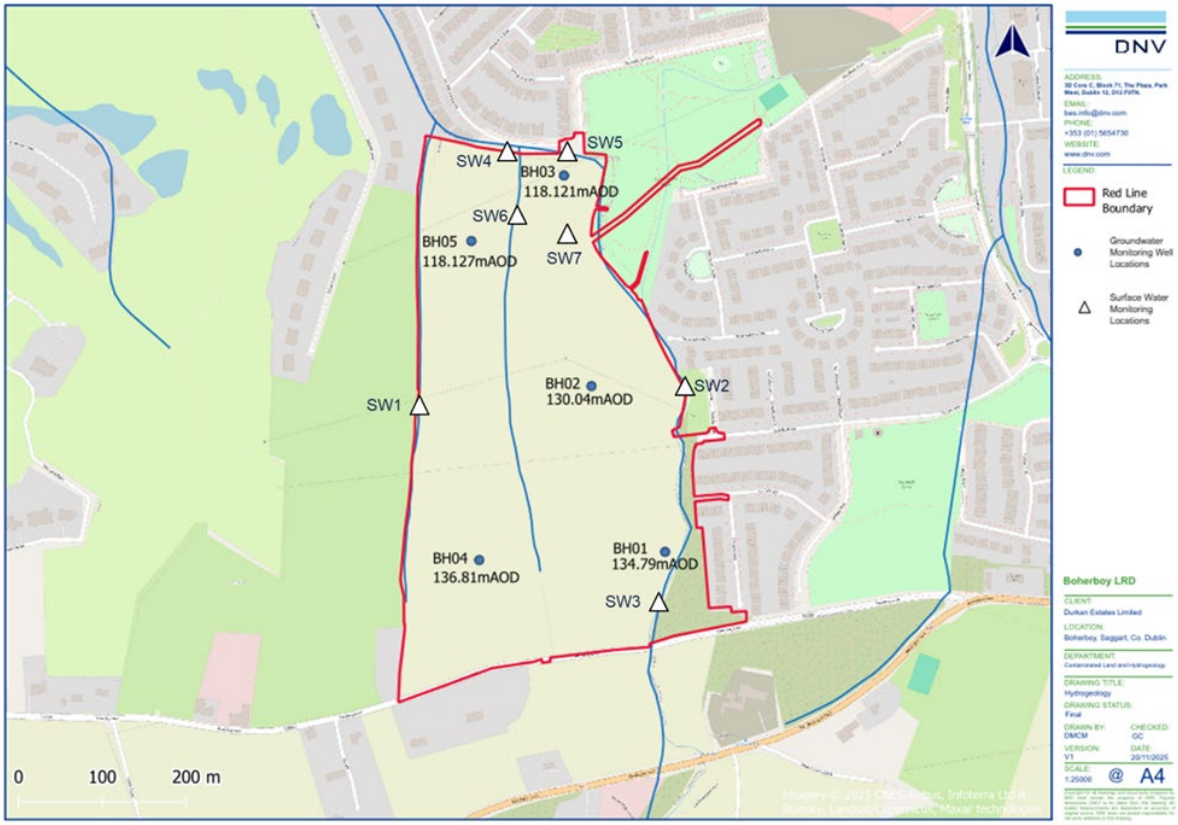

Figure 6-9. Site Investigation Locations

6.3.7.2.1 Ground Conditions

The soil and geology encountered during the site investigation are detailed in the borehole logs (refer to Appendix A of the HRA (DNV, 2025) included in Volume 3 Appendix 6.1) and summarised as follows:

- CLAY with varying boulder content was encountered from ground level to depths ranging from 3.0mbGL at site investigation location BH04 and BH05 to 4.5mbGL at site investigation locations BH01 and BH03.
- PEAT was encountered from ground level to a maximum depth of 3.2mbGL at site investigation location BH02 in the central portion of the site.
- Clayey sandy GRAVEL / sandy GRAVEL was encountered below the CLAY / PEAT units to the final extent of investigation and maximum depth of 7.5mbGL at site investigation locations BH1, BH03 and BH05.
- CLAY / sandy CLAY was encountered at site investigation locations BH02 and BH04 from 6.0mbGL to the final extent of investigation and maximum depth of 9.0mbGL.

There was no visual or olfactory evidence of anthropogenic contamination observed.

Groundwater strikes were recorded between 2.0mbGL at BH05 in the north of the site, to 4.0mbGL at BH01 in the south of the site.

6.3.8 Geochemical Domain

The GSI along with the EPA have developed geochemically appropriate levels (GALs) for soil recovery facilities across Ireland specifically in relation to metals and metalloids in uncontaminated soil and stone (GSI, 2025). There are a total of seven defined domains

across the country. The geochemical domains map indicates that the site is located within Domain 5, the subsoil composition is described as Lower Palaeozoic sandstones, shales, and igneous rocks.

A summary of the maximum expected metals concentrations for Domain 5 are presented below in Table 6-3.

Table 6-3 Geochemically Appropriate Levels form Domain 5

Element	Units	Value
Arsenic	mg/kg	41.5
Cadmium	mg/kg	1.42
Chromium	mg/kg	73.2
Copper	mg/kg	77.6
Mercury	mg/kg	0.302
Nickel	mg/kg	65.7
Lead	mg/kg	109.0
Zinc	mg/kg	224

6.3.9 Radon

The Radon Risk Map of Ireland (EPA, 2025) shows a prediction of the number of the houses in any one area that are likely to have high radon levels. The map is based on an analysis of indoor radon measurements plus geological information including, bedrock type, quaternary geology, soil permeability and aquifer type.

The southern portion of the site is mapped by the EPA (EPA, 2025) as being in an area where 'about 1 in 10 homes in this area is likely to have high radon levels' whereas the northern portion of the site is classified as an area where 'about 1 in 20 homes in this area is likely to have high radon levels'.

The EPA cite the reference level for radon as 200 Bq/m^3 and a High Radon Area where more than 10% of homes may have more than the reference level of radioactivity. The southern portion of the site is classified as having 'high' radon levels as 10% of the houses in the area are mapped by the EPA as being over this reference level. It is noted that a high radon level can be found in any home, in any part of the country, but these homes are more likely to be located in medium to high radon areas.

6.3.10 Geohazards

There are no karst features mapped by the GSI (GSI, 2025) at the Site or within a 2km radius of the site

The majority of the site is located within an area with a 'low' landslide susceptibility (GSI, 2025). However, two (2No.) small areas in the southeastern and southwestern corners of the site are classified as 'moderately low' (GSI, 2025). There are no recorded landslides at the site or within a 2km radius of the site (GSI, 2025).

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. There are six permanent broadband seismic recording stations in Ireland operated by DIAS. Records since 2010 show that the majority of recorded seismic events

were associated with quarry blasts and no recent events have been recorded within 2km of the site or the Greater Dublin Area.

6.3.11 Geological Heritage Sites

There are no geological heritage sites mapped by the GSI (GSI, 2025) within the site. The closest geological heritage site is Belgard Quarry (Site Code: SD002), a very large, working quarry and the biggest exposure of the usually poorly exposed Calp Limestone which underlies Dublin, which is located approximately 1.91km northeast of the site.

The geological heritage sites in the vicinity of the site are presented in Figure 6-10.

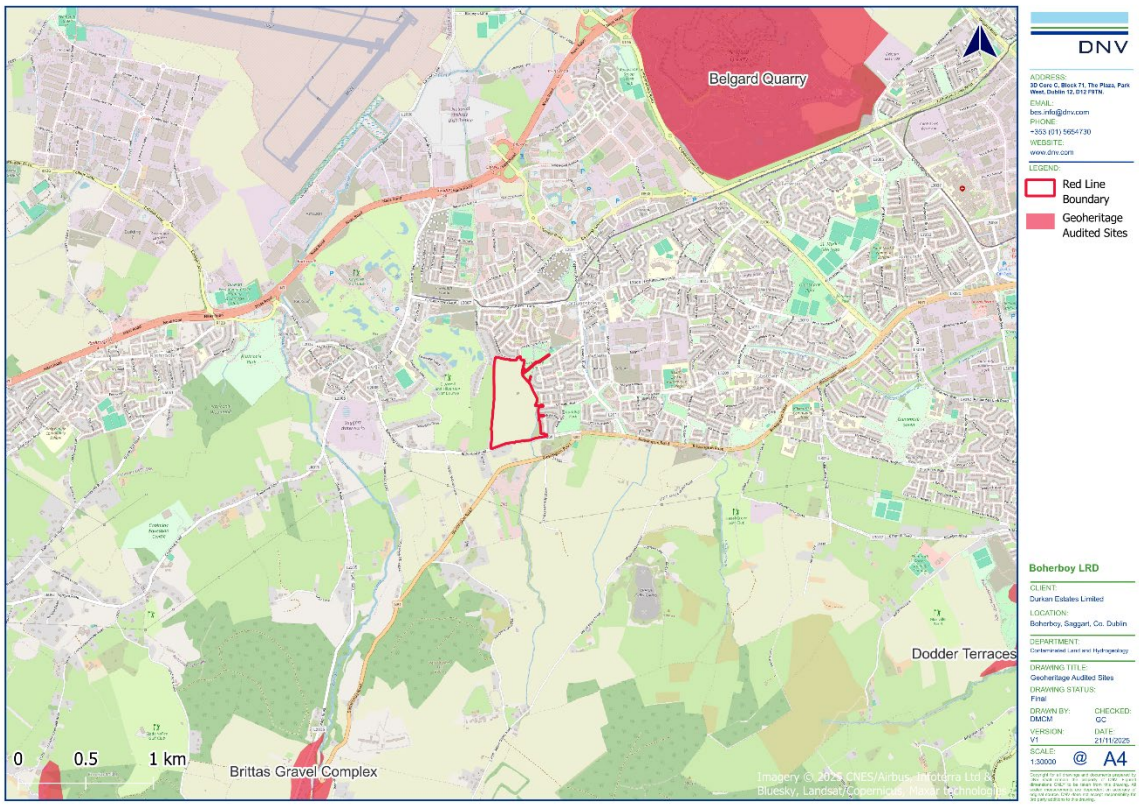

Figure 6-10. Geological Heritage Sites

6.3.12 Economic Geology

The lands beneath the majority of the site are mapped by the GSI (GSI, 2025) as having no mapped granular aggregate potential. However, the granular aggregate potential along the southern boundary of the site is classified as ‘very high’ potential (refer to Figure 6-11).

The bedrock beneath the majority of the site has been identified by the GSI (GSI, 2025) as having a ‘moderate’ potential for crushed rock aggregate. While the bedrock beneath the northern portion of the site has been identified by the GSI (GSI, 2025) as having a ‘low’ potential for crushed rock aggregate.

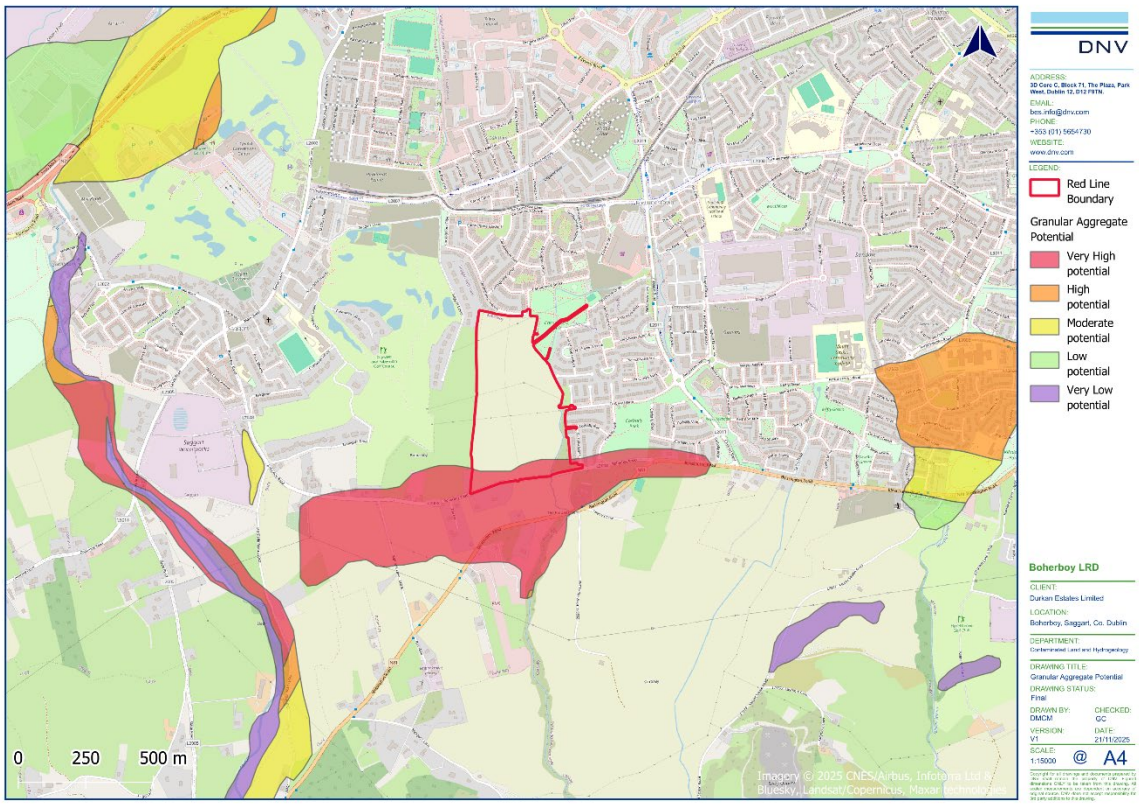

Figure 6-11. Granular Aggregate Potential

6.3.13 Importance of Baseline Environment

The site comprises approximately 18.5 hectares (Ha) of primarily undeveloped agricultural lands separated by a hedgerow and stream.

The GSI (GSI, 2025) has assigned a 'Moderate' permeability rating to the subsoils beneath the site. Site investigation results indicate that there were cohesive sediments of low permeability (i.e., clay) to depths ranging from 3.0mbGL to 4.5mbGL across the majority of the site.

According to the GSI (GSI, 2025), the subsoils across much of the site are mapped as having no granular aggregate potential, indicating that the economic extraction of granular aggregate from this site is not feasible. However, the bedrock across most of the site is classified as having a high potential for the extraction aggregate.

Taking into account the attributes of the soil and geology underlying the site, and in accordance with the TII Guidance as documented by the NRA (NRA, 2009) and as outlined in Table 6-1, the soil and bedrock underlying the site of the Proposed Development would be rated as having an overall 'medium' geological importance.

6.4 Characteristics of the Proposed Development

A full description of the Proposed Development is outlined in Chapter 2 of this EIAR.

The following components are of particular relevance with respect to land, soil and geology during the construction phase and operational phase of the Proposed Development.

6.4.1 Construction Phase

The construction phase of the Proposed Development will include:

- Foundation design will be finalised at detailed design stage. However, it is anticipated that foundation design will consist of traditional strip footings on the underlying firm to stiff cohesive deposits, or the medium dense granular deposits at depths ranging from 1.0 meters below ground level (mbGL) to 2.0mbGL. There may also be a requirement for piling.
- The stripping of existing topsoil at the site.
- The excavation of approximately 184,422m^3 of soil and subsoil for the construction of building foundations, surface water and foul water drainage infrastructure.
- Based on the findings of site investigations carried out across the site (GII, 2014 and DNV 2025c), it is anticipated that there will be no requirement for the excavation of bedrock during the construction phase of the Proposed Development.
- Where possible, it is intended to reuse suitable excavated soil and subsoil for landscaping and engineering use (total fill requirement of approximately 249,228m^3). However, it is anticipated that approximately 103,689m^3 of surplus materials will require removal offsite in accordance with all statutory legislation.
- Temporary stockpiling of excavated material pending re-use onsite.
- The importation of approximately 164,654m^3 of aggregate fill materials will also be required for the construction of the Proposed Development (e.g., granular material beneath road pavement, under floor slabs and for drainage and utility bedding / surrounds etc.).

6.4.2 Operational Phase

The operational stage of the Proposed Development consists of the typical activities in a residential development and with the exception of localised landscaped areas (i.e., gardens, recreational areas, etc.), there will be no bulk excavation of soils or bedrock or infilling of waste.

The land use at the site will change from undeveloped lands to residential development with associated vehicular and pedestrian access, car parking and landscaping.

With the exception of rainfall on landscaped areas of the site and small quantities of rainfall to SuDS, there will be no discharges to ground during the operational phase of the Proposed Development.

There will be no requirement for bulk storage of petroleum hydrocarbon-based fuels or supply of natural gas during the operational phase of the Proposed Development. Further details are provided in Chapter 13 of this EIAR.

6.5 Potential Effect of the Proposed Development

The procedure for determination of potential effects on the receiving land, soils and geology is to identify potential receptors within the Proposed Development site boundary and surrounding environment and use the information gathered during the desk study and site walkover to assess the degree to which these receptors will be effected upon in the absence of mitigation.

The assessment will identify the likely effects during the construction and operational phases of the Proposed Development. This will involve assessing the significance of any potential

effects by determining the sensitivity of the receptors and the magnitude of the potential effect. Effects are described in terms of quality, significance, duration and type as detailed in Table 6-2.

6.5.1 Construction Phase

6.5.1.1 Land Take and Land Use

The Proposed Development will require approximately 18.7ha. of land and will change from undeveloped grasslands to residential use. In line with the Fortunestown Local Area Plan (2012), approximately 1.4 hectares within the site are reserved for a future school site. Similarly, the South Dublin County Development Plan (2022–2028) designates approximately 1 hectare within the site for the same purpose.

The proposed change in land use aligns with the zoning objectives set out in the South Dublin County Development Plan (2022–2028). Further details on the legislative framework and consistency with strategic national, regional, and local planning policies are provided in Chapter 3 of this EIAR.

As a result, the development will involve an unavoidable land take, leading to a 'negative', 'significant', and 'permanent' effect on land and soil, particularly when assessed in the context of surrounding land uses and zoning objectives. This is considered significant in the context of the EIA Directive.

6.5.1.2 Excavation and Removal of Soil and Subsoil

It is anticipated that there will be no requirement for the excavation of bedrock during the construction phase of the Proposed Development. However, there will be an unavoidable loss of in situ soils and subsoils from the site to achieve the required formation levels for the Proposed Development including building foundations, roads, drainage and other infrastructure.

The construction of the Proposed Development will require the excavation of 184,422m^3 of soil and subsoil. It is intended to reuse approximately 80,733m^3 of excavated soil and subsoil for landscaping and engineering use. However, it is anticipated that approximately 103,689m^3 of surplus and unsuitable material will require removal offsite. The soils and subsoils underlying the site of the Proposed Development are considered to be of 'medium' importance. Accordingly, there will be a 'negative' 'moderate' and 'permanent' effect on the underlying soils at the site and is considered non-significant in the context of the EIA Directive.

The removal of surplus soil offsite will be undertaken in accordance with applicable statutory requirements. This may include where suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011. The potential effect with removal offsite of surplus soil and other material as waste is assessed in Chapter 13 of this EIAR.

6.5.1.3 Soil Quality and Contamination

Reuse of Soil and Subsoil

The excavation and reuse of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for onsite use in accordance with engineering and

environmental specification for the Proposed Development that will be determined during the detailed design phase. Therefore, the reuse of soils onsite will result in a 'neutral', 'imperceptible' and 'permanent' effect on the quality of willow soils underlying the site and is considered non-significant in the context of the EIA Directive.

Concrete Works

There is a potential risk associated with the use of cementitious materials during construction of subsurface structures (such as building foundations) on the underlying soil and geology at the Proposed Development. It is considered that this may result in a 'negative', 'moderate' and 'long-term' effect on existing quality of soil within a localised area underlying the site and is considered non-significant in the context of the EIA Directive.

Piling

It is noted that piling (where required) during the construction phase of the Proposed Development, may potentially create pathways for contaminants such as grout or other materials to enter the underlying hydrogeological environment. The potential effect with piling is assessed in Chapter 7 of this EIAR.

Handling of Fuels and Hazardous Materials

The potential accidental release of deleterious materials including fuels and other materials being used onsite, through the failure of secondary containment or a materials' handling accident on the Proposed Development could potentially result in a 'negative', 'moderate to significant', 'long-term' effect on the receiving soil and geology depending on the nature of the incident. It is noted that this effect is considered significant in the context of the EIA Directive due to the potential for long-term degradation of the effected soils in the absence of mitigation. This worst-case scenario is deemed to be unlikely to occur.

6.5.1.4 Soil Structure

The excavation and re-use of soil at the site (where possible) will result in the exposure of the materials to various elements including weather, construction traffic and temporary stockpiling. This exposure can lead to changes in the soil's moisture content, temperature, and structure (e.g., rain can cause the soil to become waterlogged, dry weather can lead to desiccation and cracking, movement of construction vehicles and equipment over the soil can cause compaction and disturbance reducing the soil's porosity, making it less able to absorb water and nutrients). Over time, the soil may become less cohesive and more prone to erosion and instability. The combined effects of exposure to elements, construction traffic, and temporary stockpiling will have a potential 'negative,' slight' and 'long term' effect on the natural strength of the materials and is considered non-significant in the context of the EIA Directive.

6.5.1.5 Importation of Fill Materials

The importation of 164,654m^3 aggregate fill materials (i.e., granular material beneath road pavement, drainage and utility bedding / surrounds, etc.) will be required for the construction of the Proposed Development. The potential effects may include loss of attribute and changes in the geological regime at the source site(s). It is anticipated that the required soil and stone materials and aggregates identified for importation onsite will be 'indirect' and have a 'neutral,' 'imperceptible' and 'permanent' effect on the source site(s). This effect is considered imperceptible and non-significant in the context of the EIA Directive taking account of the fact

that the statutory consent process would have required the necessary environmental effects to be assessed and mitigated as appropriate at the source site(s).

6.5.1.6 Dust Generation

There is a potential for creation of windblown dust generation from the temporary stockpiling of materials onsite. In addition, construction vehicle movements, particularly along unpaved or dry haul routes, may contribute to fugitive dust emissions. Exhaust emissions will also arise from the operation of excavators, heavy goods vehicles (HGVs), and vibrating rollers during the construction phase of the Proposed Development. An assessment of the potential effect of the Proposed Development with regard to the generation of dust is addressed in Chapter 8 of this EIAR.

6.5.1.7 Geological Heritage Sites

Given the separation distance between the site and the closest geological heritage site is Belgard Quarry (Site Code: SD002), located approximately 1.91 km northeast of the site, and the nature of the Proposed Development, no likely risks to geological heritage features are anticipated. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

6.5.1.8 Geological Hazards

The site is not located within an area associated with karst geology and therefore there are no identified risks associated with karst features. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

As detailed in Section 6.6.1.1, all soil, stone materials, and aggregates imported to the site for use in the Proposed Development will be subject to strict quality control procedures in accordance with the design specifications and relevant Building Regulations. These measures are intended to prevent the introduction of pyrite or other deleterious materials into the construction process. Given these controls, and the nature of the materials management approach, no likely risks are anticipated. Accordingly, the predicted effects are considered imperceptible and not significant in the context of the EIA Directive.

Overall, it is considered that the potential effects on geohazards during the construction phase of the Proposed Development will have a ‘neutral,’ imperceptible’ and ‘permanent effect and are not significant in the context of the EIA Directive.

6.5.2 Operational Phase

During the operational phase of the Proposed Development there is a limited potential for any direct adverse effect on the receiving land, soil and geological environment at the site taking account of the design for the Proposed Development.

The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which will ensure that the site will be suitable for use for the operational phase as a residential development taking account of the geological site setting.

Given the low to moderately low landslide susceptibility, the absence of recorded landslides, and the lack of recent seismic activity in the vicinity, the likelihood of significant adverse effects on the environment due to geohazards is considered very low. As such, the predicted effects

related to landslide and seismic risk are assessed as imperceptible and not significant in the context of the EIA Directive.

The southern portion of the site is identified as being located within a 'High' Radon Area. The design and specification for all buildings will be in accordance with current Building Regulations and therefore any potential issues associated with radon will be addressed and avoided. Therefore, the predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive.

Overall, the predicted effects on the receiving land, soil and geological environment during the operational phase of the Proposed Development are considered to be 'neutral,' imperceptible' and 'permanent' and are not significant in the context of the EIA Directive.

6.5.3 Potential Cumulative Impacts

Cumulative effects can be defined as "effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer. The cumulative impacts also take into account the combined effects of the Proposed Development and other projects in the surrounding area, particularly where actions occur within the same timeframe.

The consideration of potential cumulative effects is an important stage in the EIA process. Although the Proposed Development may not result in significant residual effects in isolation, when the Proposed Development is considered cumulatively with other projects, significant residual effects may occur. Therefore, as part of this assessment, other offsite developments and proposed offsite developments as detailed in Chapter 2 of this EIAR were reviewed and considered for possible cumulative effects with the Proposed Development

6.5.3.1 Construction Phase

Excavation and Removal of Soil and Subsoil

Excavated soil and subsoil during the construction phase of the Proposed Development could potentially be directed to the same receiving waste facilities for recovery / disposal as excavated materials from other developments detailed in Chapter 2 of this EIAR and within the Greater Dublin Area. All surplus soils and subsoils from the site will be removed offsite in accordance with the requirements of the RWMP (DNV, 2025b) and all statutory legislation. Accordingly, it is considered that any cumulative effect on lands, soils and geology associated with the Proposed Development will be 'neutral', 'imperceptible' and 'permanent' and is considered non-significant in the context of the EIA Directive.

Import of Aggregates and Materials

The importation of soil and stone materials and aggregates to the Proposed Development may be sourced from the same borrow site or authorised site as other permitted developments detailed in Chapter 2 of this EIAR and within the Greater Dublin Area. This includes the potential importation of surplus soil and stone materials from other developments, where such materials are transferred in accordance with Article 27 of the European Communities (Waste

Directive) Regulations 2011, and are not considered waste due to their intended beneficial use. However, contract and procurement procedures will ensure that all imported materials, whether originating from quarry sources or surplus materials from other developments, are sourced from reputable, authorised suppliers operating in a sustainable manner and in compliance with all relevant statutory consents and environmental regulations. Therefore, regardless of the number of other projects and developments using aggregates from the same source sites, there will be an 'indirect', 'neutral', 'imperceptible' and 'permanent' effect on the geological environmental at the source site and it is considered non-significant in the context of the EIA Directive.

There are no other cumulative effects associated with land, soil and geology associated with the construction phase of the Proposed Development

6.5.3.2 Operational Phase

There will be no cumulative effects on land, soil and geology during the operational phase of the Proposed Development.

6.5.4 "Do Nothing" Impact

The 'Do Nothing' scenario assesses the potential effect on the receiving land, soils, and geological environment if the Proposed Development did not proceed.

In the 'Do Nothing' scenario, there would be no change or resulting effect on the nature of the site with respect to land, soil and geology as the site of the Proposed Development would remain as undeveloped grasslands in the immediate term. However, the proposed change in land use is in accordance with the zoning objectives as set out in the current South Dublin County Development Plan (2022–2028). Therefore, while the site would remain undeveloped in the short term, the potential for future development remains. As such, even in the absence of the Proposed Development, it is considered that the types of construction and operational phase effects assessed in this chapter of the EIAR may still occur in the future, albeit under a different development proposal. In this scenario, the current assessment remains relevant as an indication of the likely nature and scale of effects on land, soil and geology associated with residential development on the site.

6.6 Avoidance, Remedial & Mitigation Measures

The mitigation measures as outlined below, will ensure that there will be no significant effect on the receiving land, soil and geology.

6.6.1 Construction Phase

During the construction phase, all works will be undertaken in accordance with the Construction Environmental Management Plan (CEMP) (DNV, 2025a; submitted with the planning application under separate cover) and the Resource and Waste Management Plan (RWMP) (DNV, 2025b; submitted with the planning application under separate cover). Following appointment, the contractor will be required to further develop the CEMP and RWMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The CEMP and

RWMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place during the construction phase of the Proposed Development.

6.6.1.1 Import of Soil, Subsoil and Aggregate Materials

Contract and procurement procedures will ensure that all imported soil, subsoil, and aggregate materials required for the construction phase of the Proposed Development are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity standards, statutory obligations, and the relevant provisions of the RWMP (DNV, 2025b). Where applicable, the importation of soil and stone from other developments will be carried out in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011, ensuring that such materials are not considered waste and are suitable for beneficial use.

All imported materials will be subject to robust management and control procedures, including testing for contaminants, invasive species, and other anthropogenic inclusions, and assessment of their suitability for use in accordance with the engineering and environmental specifications for the Proposed Development. As a result, any unsuitable material will be identified prior to unloading or placement on site, thereby ensuring environmental protection and compliance with regulatory requirements.

6.6.1.2 Airborne Dust Generation

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through the selection of adequate mitigation techniques and effective management. The most effective technique is to control dust at source and prevent it from becoming air borne by implementing the following mitigation measures:

- Excavated soils will be carefully managed and maintained to minimise potential effect on soil quality and soil structure.
- Handling of soils and materials will be undertaken in accordance with documented procedures outlined in the CEMP and RWMP that will be set out in order to protect ground and minimise airborne dust.
- The normal measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This may require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the site.
- Vehicles travelling on any unsurfaced site roads will have their speed restricted to 20 kph.
- Footpaths immediately around the site will be cleaned by hand regularly, with damping as necessary.
- High level walkways and surfaces such as scaffolding will be cleaned regularly using safe ‘wet’ methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
- Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods as necessary.

- Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed
- Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions, utilising the methods highlighted above. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes which are envisaged.
- The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The name and contact details of a person to contact regarding air quality and dust issues will be displayed on the site boundary, this notice board will also include head/regional office contact details.

Potential effects and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8 of this EIAR.

6.6.1.3 Reuse of Soil

Soil and subsoil materials to be reused within the Proposed Development (i.e., for engineering fill and landscaping) will be subject to assessment of suitability for use in accordance with engineering and environmental specification for the Proposed Development. This will include:

- Defining the criteria by which the suitability of the soils for reuse will be assessed (e.g., analytical parameters and limits, the engineering requirements such as geotechnical parameters for the material to be used within the works).
- Delineation of areas where excavated soil is intended for disposal offsite as waste, and where it is intended for reuse onsite.
- Identification and recording of the location from where the soil will be excavated and its proposed reuse location and function.
- Engineering assessment to confirm its suitability for reuse.
- Any proposed treatment or processing required to enable its reuse, as well as any associated treatment permits, or licences required.

6.6.1.4 Management and Control of Soils and Stockpiles

Segregation and storage of soils for re-use onsite or removal offsite and waste for disposal offsite will be segregated and temporarily stored onsite pending removal or for reuse onsite in accordance with the CEMP (DNV, 2025a) which will be updated by the main contractor in advance of construction works commencing.

Where possible, stockpiling of soil and stone onsite will be avoided. However, in the event that stockpiling is required, stockpiled materials, pending reuse onsite, will be located away from the location of any sensitive receptors (i.e., watercourses). In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open water where sufficient working areas are available within the site boundary.

When a stockpile has been sampled for re-use or waste classification purposes, it will be considered to be complete, and no more soil will be added to that stockpile prior to removal. An excavation/stockpile register will be maintained on-site.

The reuse of suitable excavated soil and subsoil for the Proposed Development (i.e., landscaping or engineering) will be undertaken in accordance with the engineered design and landscape plan for the Proposed Development. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse or awaiting reuse onsite, will be segregated, and stockpiled appropriately in accordance with the measures outlined in the CEMP (DNV, 2025a). To minimise the overall effect on soils arising during the construction works, the following mitigation measures will be adhered to.

- A designated temporary storage area will be identified and clearly marked on site.
- All stockpiles will be assigned a unique stockpile identification number for traceability.
- Materials will be segregated by type and destination, including those identified for reuse on site, reuse off site, and waste. All segregation, storage, and stockpiling locations will be clearly delineated on site drawings.
- Soil stockpiles will be covered to prevent surface water run-off and the generation of windblown dust.
- Topsoil will not be stored in piles exceeding 2 metres in height to prevent degradation of the soil structure. It will be kept as dry as practicable and reused as soon as possible to minimise deterioration from prolonged storage or excessive handling.
- Any waste materials temporarily stored or stockpiled will be placed on impermeable surfaces, such as high-grade polythene sheeting, hardstand areas, or in skips, to prevent cross-contamination with underlying soils or other materials.
- Regular watering will be undertaken to maintain adequate moisture content in exposed soils, enhancing stability and suppressing dust emissions.
- Stockpile volumes will be kept to a minimum and, where feasible, located away from sensitive receptors such as residential areas.
- Where necessary, stockpiles will be sheeted or dampened to further control dust and erosion.
- Earthworks and excavations will be kept damp where necessary and reasonably practicable, particularly during dry or windy conditions.
- All stockpiles will be located a minimum of 20 metres from any watercourse to reduce the risk of sediment run-off and protect surface water quality.

All surplus materials and any waste generated from construction activities will be stored onsite in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required).
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent reuse, recycling and recovery.
- Prevent hazards to site workers and the general public during the construction phase (largely noise, vibration and dust).

6.6.1.5 Soil Structure

To mitigate potential impacts on soil structure during construction, the following measures will be implemented:

- The extent of the required work area and the bulk excavation footprint will be minimised where practicable to avoid unnecessary disturbance of soil. This includes reducing tracking over undisturbed soil and subsoil outside designated excavation zones, thereby limiting compaction and rutting from construction traffic.

- Topsoil and subsoil will be segregated and stored separately in accordance with best practice to preserve their structure and quality, ensuring suitability for reuse on site.
- Disturbed subsoil layers will be stabilised as soon as practicable, through activities such as backfilling of service trenches, construction of road capping layers, building foundations, and landscaping. The duration of exposure of subsoil will be minimised to reduce the risk of degradation from weathering (e.g. drying, erosion, or waterlogging).
- Stockpiles of excavated soil and subsoil will be protected for the duration of the works and strategically located to minimise double handling. Topsoil and subsoil stockpiles will be clearly separated and identified.

These measures are designed to maintain the physical integrity, fertility, and drainage characteristics of the soil, supporting its reuse and minimising environmental impact in line with good construction and environmental management practices.

6.6.1.6 Export of Resource (Soil and Subsoil) and Waste

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) and will be managed in accordance with all legal obligations.

It will be the contractor's responsibility to either; obtain a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations for the collection and movement of waste offsite.

Where appropriate, excavated soil and material intended for recovery or disposal offsite will require appropriate waste classification in order to select an appropriate receiving facility. Assessment of the excavated material will be carried out with due regard to the following guidance and legislation:

- Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous.
- EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002).
- Environmental Protection Agency documented entitled Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.
- Environment Agency, 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste.
- Any other guidance or legislation that might be applicable or relevant at the time of disposal.

The re-use of soil and subsoil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

Any surplus material not suitable for re-use as a by-product and other waste materials arising from the construction phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Any waste soils will be transported under a valid waste collection permit issued under the Waste Management (Collection Permit) Regulations 2007, as amended and will be delivered to an appropriately authorised waste management facility.

Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain including photographs as appropriate.

Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept onsite. Waste collection permits for registered hauliers and certs of registration/ licenses/permits for authorised waste facilities will be kept on file at the head office.

All site personnel and sub-contractors will be instructed about the objectives of the CDWMP and informed of their responsibilities as a consequence of its provisions.

Vehicles transporting material with potential for dust emissions to an offsite location shall be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.

Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. The main contractor will carry out road sweeping operations, employing a suction sweeper or similar appropriate method, to remove any project related dirt and/or material deposited on the road by construction/ delivery vehicles. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

6.6.1.7 Concrete Works

The use of cementitious grout during the construction phase of the Proposed Development will be managed to avoid any risk of ground contamination, through the implementation of appropriate design measures and construction methods by the appointed contractor, in accordance with the CEMP (DNV, 2025a) and relevant industry standards.

The following mitigation measures will be adhered to when using concrete and cement-based materials:

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.
- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

Weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

6.6.1.8 Handling of Fuels, Chemicals and Materials

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DNV, 2025a), in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite) and contained within constructed impermeable and bunded areas.

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas. These areas will be located within a designated area placed furthest away from adjacent watercourses / drains and contained within constructed bunded areas

Bunds will have regard to current best practice for oil storage (Enterprise Ireland, BPGCS005) and Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Environmentally friendly materials will be used during the construction process including the use of biodegradable lubricants and hydraulic fluids for machinery and equipment.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised onsite is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed offsite.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times

The appointed contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.

Spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit

6.6.1.9 Emergency Procedures

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements. The following mitigation measures will be adhered to as follows:

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Proposed Development site and compliantly disposed of offsite. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff onsite will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geology associated with the construction stage of the Proposed Development.

6.6.1.10 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by an appropriately authorised contractor.

Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by Uisce Eireann (UE).

6.6.2 Operational Phase

Taking account of the design of the Proposed Development, it is concluded that there will be no likely significant effects on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive. Therefore, there is no requirement for mitigation measures for the operational phase.

6.6.3 “Worst Case” Scenario

The potential accidental release of hazardous material including fuels, or other hazardous materials being used onsite during the construction phase could potentially effect on the receiving land, soil and geology environment. This scenario would only occur through the failure of secondary containment or a major incident on the site. The potential for or inadvertent import of contaminated materials during the construction phase could also result in an effect in the absence of the quality control measures. However, taking account of the proposed mitigation measures any environmental harm would be avoided. There would therefore be a

'neutral', 'imperceptible' and 'short-term' effect on the receiving environment. These worst-case scenarios are deemed to be highly unlikely to occur.

6.7 Residual Impacts

Residual effects are defined as 'effects that are predicted to remain after all assessments and mitigation measures'. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse effects.

The predicted effects of the construction phase and operational phase of the Proposed Development are described in Section 6.5 in terms of quality, significance, extent, likelihood, and duration.

These assessments informed the development of a comprehensive suite of mitigation measures as detailed in Section 6.6. These included control and management of earthworks, control and management of soils, subsoils and stockpiles, management and control procedures for the exportation of surplus soils and subsoils, management and control procedures for the importation of soil, subsoil and aggregate materials, control and handling of cementitious materials, control and handling of fuel and hazardous materials, and accidental release of contaminants. The effectiveness of these measures was assessed in terms of their ability to break pollutant linkages and reduce the magnitude and likelihood of effects. The residual effects, which take these measures into account, are summarised in Table 6-4.

Overall, considering the avoidance, remedial and mitigation measures detailed in Section 6.6, the residual effects regarding the construction phase and operational phase of the Proposed Development are considered 'imperceptible' to the receiving environment (land, soil and geology) and considered non-significant in the context of the EIA Directive.

Table 6-4. Residual Effects

Activity	Attribute	Predicted Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
Construction Phase								
Construction of the Proposed Development	Land Take and Land Use	The Proposed Development will require a land take of 18.5Ha and will change from undeveloped grasslands to residential land use.	Negative	Significant (Significant in the Context of the EIA Directive)	Permanent	Direct	Unavoidable and no mitigation. The Proposed Development is in line with the zoning objectives as set out in the South Dublin County Development Plan (2022–2028).	Significant (Significant in the Context of the EIA Directive)
Removal of Soil and Subsoil Not Suitable for Re-use Onsite	Soils and Subsoils	The construction of the Proposed Development will require the excavation of soil and subsoil. It is intended to reuse excavated soil and subsoil for landscaping and engineering use. However, it is anticipated that surplus and unsuitable material will require removal offsite.	Negative	Moderate (Non-significant in the Context of the EIA Directive)	Permanent	Direct	None required. Where possible, it is intended to retain and re-use suitable excavated soil and subsoil for engineering fill and landscaping. The removal of surplus soil offsite will be undertaken in accordance with applicable statutory requirements. This may include where suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011.	Moderate (Non-significant in the Context of the EIA Directive)
Excavation and Removal of in-	Lands, Soils and Geology at	Surplus excavated soil and subsoil during the construction phase of the	Negative	Slight (Non-significant in the	Permanent	Indirect / Cumulative	All surplus soils and subsoils from the site will be removed offsite in	Imperceptible (Non-significant in

Activity	Attribute	Predicted Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
situ Soil and Subsoil	Destination Site	Proposed Development could potentially be directed to the same receiving waste facilities for recovery / disposal as excavated materials from other developments.		Context of the EIA Directive)			accordance with the requirements of the RWMP (DNV, 2025b) and all statutory legislation.	the Context of the EIA Directive)
Reuse of Excavated Soil	Land and Soil	It is intended to reuse excavated soil and subsoil for landscaping and engineering use.	Neutral	Imperceptible (Non-significant in the Context of the EIA Directive)	Permanent	Direct	The re-use of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for use onsite and in accordance with engineering and environmental specification for the Proposed Development.	Imperceptible (Non-significant in the Context of the EIA Directive)
Use of Cementitious Materials	Soils and Subsoils	Potential release of cementitious material during construction of subsurface structures (such as foundations) to the land, soil, and geological environment.	Negative	Moderate (Non-significant in the Context of the EIA Directive)	Long-Term	Direct	The cementitious grout and other concrete works during the construction phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by the appointed contractor in accordance with the CEMP (DNV, 2025a) and relevant industry standards.	Imperceptible (Non-significant in the Context of the EIA Directive)
Accidental Release of Deleterious Materials (e.g.,	Soils, Subsoils and Bedrock	Potential (albeit low) for uncontrolled release of deleterious materials including fuels and other	Negative	Moderate to Significant (Significant in the Context of	Long Term	Direct / Worst Case	Refueling of plant and storage of any deleterious materials including fuels will be undertaken in	Imperceptible (Non-significant in the Context

Activity	Attribute	Predicted Effect	Quality	Significance	Duration	Type	Mitigation	Residual Effect
Fuels or Other Hazardous Materials Being Used Onsite)		materials being used on-site, through the failure of secondary and tertiary containment or a materials handling accident, to the land, soil, and geological environment.		the EIA Directive)			accordance with the requirements and procedures outlined in the CEMP (DNV, 2025a).	of the EIA Directive)
Stockpiling of Excavated Soil and Subsoils	Soil Structure	The temporary stockpiling of excavated soils will result in exposure of the materials to various elements including weather.	Negative	Slight (Non-significant in the Context of the EIA Directive)	Long-term	Direct	The segregation and stockpiling of soil and stone at the site pending reuse or removal offsite will be carefully managed and maintained in order to minimise potential effect on soil quality.	Imperceptible (Non-significant in the Context of the EIA Directive)
Import of Materials Onsite	Land, Soil and Geology	The Proposed Development will require the importation of soil and stone materials to achieve formation levels and aggregate fill materials for the construction of roads and utility infrastructure. The potential effects may include loss of attribute and changes in geological setting at the source site(s).	Neutral	Imperceptible (Non-significant in the Context of the EIA Directive)	Permanent	Indirect / Cumulative	Only certified materials from authorised sources will be used.	Imperceptible (Non-significant in the Context of the EIA Directive)
Operational Phase								
There are no likely significant residual effects on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be 'neutral,' imperceptible' and 'permanent' and are not significant in the context of the EIA Directive.								

6.8 Monitoring

6.8.1 Construction Phase

During the Construction Phase of the Proposed Development, the following monitoring measures will be implemented where appropriate:

- Routine inspections of construction activities will be carried out daily by the contractor staff to ensure all controls to prevent environmental effect, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure that the works are undertaken in compliance with the CEMP (DNV, 2025a) and that the requirements of the Grant of Planning and associated documentation are being adhered to during construction.
- Routine monitoring and inspections during refuelling and concrete works to ensure no adverse effects and compliance with avoidance, remedial and mitigation measures.
- The excavation and reuse of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for onsite use in accordance with engineering and environmental specification for the Proposed Development that will be determined during the detailed design phase.
- Where the material is not suitable for re-use and considered a waste, additional sampling and assessment of soil and materials may be required to ensure that the materials are managed and removed offsite in accordance with waste management legislation. The waste classification of sample results will be based on the following method:
    - Soil sample collection and analysis in accordance with relevant industry standards including but not limited to:
        - EPA guidance document ‘List of Waste & Determining if Waste is Hazardous or Non-hazardous and Waste Classification’ (EPA, 2018); and
        - BS 10175:2011 Investigation of potentially contaminated sites - Code of practice (BSI, 2011).
    - Assessment of results to determine if the sample is a hazardous or non-hazardous waste and assigning a List of Waste (LoW) Code to the sampled material in accordance with EPA guidance ‘Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous’ (EPA, 2018).
    - The material will also be assessed to determine if the material meets the waste acceptance criteria for authorised landfills and soil recovery facilities as follows:
        - Screening the sample analytical results against the waste acceptance criteria (Landfill WAC) set out in the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002); and
        - Screening the sample analytical results against the Maximum Concentrations and/or Soil Trigger Levels set out in the Environmental Protection Agency (2020) “Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities” (SRF WAC).
- The appointed contractor will monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations which will be undertaken in advance of construction works commencing.

- A dust deposition monitoring programme will be implemented during the construction phase in order to verify the continued compliance with relevant standards and limits. Where required, the appointed contractor will undertake dust monitoring at a range of nearest sensitive receptors during the construction phase of the Proposed Development with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m^2/day, averaged over one year and applied as a 30-day average.
- Materials management and waste audits will be carried out at regular intervals to monitor the following:
    - Management of soils onsite and for removal offsite.
    - Record keeping.
    - Traceability of all materials, surplus soil and other waste removed from the site.
    - Ensure records are maintained of material acceptance at the end destination

6.8.2 Operational Phase

There are no monitoring requirements specifically in relation to land, soil and geology during the operational phase of the Proposed Development

6.9 Interactions

6.9.1 Population and Human Health

An assessment of the potential effect of the Proposed Development on human health is included in Chapter 4 of this EIAR.

There is a potential risk of dust generated from excavation and stockpiling of soil during the construction phase of the Proposed Development posing a human health risk in the absence of standard avoidance and mitigation measures which will be implemented to be protective of human health.

Appropriate industry standards and health and safety legislative requirements will be implemented during the construction phase of the Proposed Development that will be protective of site workers.

The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which will ensure that the site will be suitable for use for the operational phase as a residential development taking account of the geological site setting.

6.9.2 Biodiversity

An assessment of the potential effects of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be effected as a result of the excavation and importation of materials to the site are included in Chapter 5 of this EIAR. It also provides an assessment of the effects of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these effects.

6.9.3 Hydrology and Hydrogeology

An assessment of the potential effect of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR.

In the absence of avoidance, remedial, and mitigation measures, construction activities may potentially create pathways for potential sources of contamination to enter underlying groundwater. During the construction phase of the Proposed Development, groundwater vulnerability is expected to temporarily increase. Construction activities will involve the use of potentially hazardous materials such as cementitious materials, fuels, oils, and other substances. An uncontrolled release of these materials, whether through containment failure or handling accidents, could affect the surrounding environment. In addition, in the absence of avoidance, remedial and mitigation measures, there is a potential for sediment from excavated soils to enter water runoff and discharge into the receiving Corbally stream, Coldwater stream and Cooldown stream. Procedures for the protection of the receiving water environment are set out in Chapter 7 of this EIAR.

6.9.4 Air Quality and Climate

The excavation of soils across the site and the temporary stockpiling of soils pending reuse or removal offsite has the potential to generate nuisance effects (i.e., dust) during the construction phase of the Proposed Development. An assessment of the potential effect of the Proposed Development on air quality is included in Chapter 8 of this EIAR.

6.9.5 Landscape and Visual

During the construction phase and into the operational phase of the Proposed Development, the site landscape will undergo a change from undeveloped lands to residential use. An assessment of the potential effect of the Proposed Development on the receiving landscape is included in Chapter 11 of this EIAR.

6.9.6 Material Assets: Traffic, Transport, Utilities, Infrastructure and Waste

An assessment of the potential effect of the Proposed Development on the material assets (waste and utilities) and material assets (traffic and transport) are included in Chapter 13 and Chapter 14 of this EIAR, respectively.

Where possible, it is intended to retain and re-use the excavated soil and subsoil on the site for engineering fill and landscaping. However, where required, unsuitable soil and subsoil will be removed offsite in accordance with all statutory legislation.

There is also a requirement to import soil, subsoil and aggregate materials during the construction phase of the Proposed Development.

6.10 Difficulties Encountered When Compiling

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

6.11 Conclusion

Overall, considering the avoidance, remedial and mitigation measures, the residual effects regarding the construction phase and operational phase of the Proposed Development are considered ‘imperceptible’ to the receiving environment (land, soil and geology) and considered non-significant in the context of the EIA Directive.

6.12 References

Construction Industry Research and Information Association (2015) Environmental good practice on Site guide (CIRIA -C741).

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

DNV, 2025. Construction Environmental Management Plan.

DNV, 2025. Hydrogeological Risk Assessment.

DNV, 2025. Resource and Waste Management Plan.

Environmental Protection Agency, 2025. EPA Envision Maps. https://gis.epa.ie/EPAMaps/. Consulted in November 2025.

Environmental Protection Agency, 2020 (EPA, 2020). Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.

Environmental Protection Agency, May 2022 (EPA, 2022). Guidelines on the information to be contained in Environmental Effect Assessment Reports.

Geological Society of Ireland, 2025. GSI web mapping. https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Consulted in November 2025.

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Ground Investigations Ireland, 2014. Ground Investigation Report.

Institute of Geologists of Ireland Guidelines, 2002. Geology in Environmental Effect Statements, A Guide.

Institute of Geologists of Ireland - Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Effect Statements.

National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

Roger Mullarkey & Associates, 2025. Drainage and Water Infrastructure Engineering Report.

South Dublin County Council (SDCC, 2022). South Dublin County Development Plan 2022-2028.

7 HYDROLOGY AND HYDROGEOLOGY

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the hydrology and hydrogeology (water) environment within and immediately surrounding the site of the Proposed Development and an assessment of the potential effects of the Proposed Development on hydrology and hydrogeology and sets out any required mitigation measures where appropriate.

The principal objectives of this chapter are to identify:

- Hydrological and hydrogeological characteristics of the receiving environment at the site of the Proposed Development.
- Potential effects that the Proposed Development may have on the receiving water environment.
- Potential constraints that the environmental attributes may place on the Proposed Development.
- Required mitigation measures which may be necessary to minimise any adverse effects related to the Proposed Development.
- Evaluate the significance of any residual effects.

This chapter of the EIAR should be read in conjunction with Chapter 4 Population and Human Health, Chapter 5 Biodiversity, Chapter 6 Land and Soil, Chapter 8 Air Quality, Chapter 11 Landscape and Visual Effect and Chapter 13 Material Assets: Waste and Utilities of the EIAR and other information provided by the Applicant pertaining to the design proposals for the Proposed Development.

7.1.1 Quality Assurance and Competency of Experts

The chapter was prepared by Gareth Carroll BA BEng MIEnvSc CEnv, a Principal Consultant of DNV. Gareth, a Chartered Environmentalist with the Institute of Environmental Sciences (CEnv) and over 13 years' experience in environmental assessment of brownfield and greenfield sites for a range of project types and geological and hydrogeological site settings and is professionally competent and accredited to undertake environmental impact assessments.

The chapter was reviewed and approved by Patrick Higgins BSc, MSc, MIEnvSc CEnv who is a Technical Director with DNV, with over 20 years' experience in environmental consultancy. Patrick brings extensive expertise in the preparation and evaluation of environmental assessments. He is professionally accredited and recognised as competent to undertake Environmental Impact Assessments (EIAs), ensuring that the content of this chapter meets the highest standards of technical accuracy and regulatory compliance.

7.2 Study Methodology

7.2.1 Relevant Legislation & Guidance

The methodology adopted for the assessment has regard to the relevant guidelines and legislation including:

- Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities.
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC (Water Framework Directive (WFD)).
- European Commission, 2022. WFD Reporting Guidance 2022. Final Draft V4.
- Act No. 30/2007, Water Services Act 2007 as amended.
- Act No. 21/1990, Local Government (Water Pollution) (Amendment) Act, 1990 as amended.
- Act No. 1/1977, Local Government (Water Pollution) Act, 1977 as amended.
- S.I. No. 722/2003 – European Communities (Water Policy) Regulations 2003 as amended.
- S.I. No. 489/2011 – European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011.
- S.I. No. 122/2010 – European Communities (Assessment and Management of Flood Risks) Regulations 2010 as amended.
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended.
- S.I. No. 9 of 2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 as amended.
- Transport for Ireland (TII), 2009. Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- WFD Working Group, 2005. Guidance on the Assessment of the Effect of Groundwater Abstractions (WFD, 2005).
- South Dublin County Council (SDCC, 2022). South Dublin County Development Plan 2022-2028.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice. Other guidance used in the assessment of potential effects on the receiving water environment include:

- Construction Industry Research and Information Association, 2016. Groundwater Control: Design and Practice (CIRIA – C750).
- Construction Industry Research and Information Association, 2015. Environmental Good Practice on Site Guide (CIRIA – C741).
- CIRIA, 2007. The SuDS Manual (C697).
- CIRIA, 2006. Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648).

- Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (CIRIA – C532).
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy
- Enterprise Ireland Oil Storage Guidelines (BPGCS005).
- Environmental Protection Agency (EPA), 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.
- UK Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG).
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.
- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (DEHLG/EPA/GSI, 1999).
- Department of the Environment, Heritage and Local Government, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, 2009).
- Department of Housing, Planning and Local Government, August 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Effect Assessment (DHPLG, 2018).
- Environmental Protection Agency, 2014. Guidance on the Authorisation of Direct Discharges to Groundwater.
- Environmental Protection Agency, 2013. Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites.
- Environmental Protection Agency, May 2022. Guidelines on the information to be contained in Environmental Effect Assessment Reports (EPA, 2022).
- Transport for Ireland (TII), 2008. Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

7.2.2 Consultation

A pre-planning meeting was held between the applicant's design team and South Dublin County Council (SDCC) on the 14th of August 2024. It was noted by SDCC that there were areas of marsh habitat on site that required resurvey during the appropriate season, and that a detailed analysis of the site's underlying geology, soils and hydrogeology were needed to understand the hydrological conditions that had allowed for the development of this habitat on site.

A second pre-planning meeting was held between the applicant's design team and SDCC on the 20th of May 2025. Clarification was sought on the site's ecological assessment and the viability of the proposed translocation of marsh habitat. It was noted that the marsh translocation proposal must be supported by clear ecological justification and design evidence demonstrating long-term habitat sustainability.

An Opinion Report following the second pre-planning meeting was received on the 17th of June 2025. Specifically, the Opinion Report highlighted the need for:

> *"A resurvey of the habitats on the site is recommended, although it is noted that the season for good habitat surveys is almost finished for 2024. Nonetheless, a survey of*

the marsh habitat which was not recorded in the original and subsequent site visits is essential, not just to record its presence but to determine its emerging value as a wetland habitat and as a nature-based solution that could be incorporated in a recommended redesign of this development proposal.

A detailed analysis of the underlying geology and soils, aquifer type and sensitivities is needed, including a detailed hydrogeological assessment, to fully ascertain the subsurface factors governing water volume, water emergence patterns, and water flow/seepage off this sloping site. The source and volume of the water supporting the development of a marsh habitat at the break of slope should particularly be determined.

This detailed analysis will be needed to assist with designing a more appropriate model for water management on the proposed development site, with the primary aim of avoiding flood risk either on the proposed site itself or in any residential and development areas downslope from the site."

A method statement has been prepared by Gannon & Associates Landscape Architecture (Gannon & Associates Landscape Architecture, 2025. Marsh Translocation Report; submitted with the planning application under separate cover), for the proposed translocation of the vegetation on site within the area of marshy ground to the northern section of the site.

A hydrological and hydrogeological risk assessment has been prepared by DNV (DNV, 2025c; included in Volume 3 Appendix 6.1 of the EIAR) to establish baseline conditions at the site and evaluate potential adverse impacts on environmental receptors. The assessment specifically examines the proposed drainage design, which aims to intercept and convey shallow groundwater beneath the site to the receiving watercourses—namely the Corbally Stream, Coldwater Stream, and Cooldown Stream—as well as to the proposed translocated wetland. This design is intended to maintain continuity of the shallow groundwater flow regime across the site and support the establishment and long-term viability of the translocated wetland habitat.

7.2.3 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An initial assessment and effect determination stage was carried out by DNV to establish the project location, type and scale of the Proposed Development, the baseline conditions, and the type of hydrological and hydrogeological environment, to establish the activities associated with the Proposed Development and to undertake an initial assessment and effect determination. This element of the assessment also included developing the Conceptual Site Model (CSM) for the site and the receiving environment. A CSM represents the characteristics of the site and identifies the possible relationship and potential risk between contaminant sources (i.e., characteristics of the proposed development), pathways (i.e., transport route or means by which a receptor can be exposed to) and receptors (receiving environment). The term pollutant linkage is used to describe a particular combination of source-pathway-receptor (SPR). Each of these elements can exist independently, but they create a risk only where they are linked together so that a particular contaminant affects a particular receptor through a particular pathway (i.e., a pollutant linkage).

This stage of the assessment included a desktop study that comprised a review of published environmental information for the site. The study area, for the purposes of assessing the baseline conditions for this chapter of the EIAR, extends beyond the site boundaries to include a 2km radius of the Proposed Development site. Potential environmental receptors outside of this radius that are potentially hydraulically connected with the site were also considered. The extent of the wider study area was based on the IGI Guidelines (IGI, 2013) that recommend a minimum distance of 2km radius from the site. This broader area is necessary to identify and evaluate all potential receptors that could be affected by the Proposed Development, either directly or indirectly. The distinction between the application site and the study area is crucial. The site of the Proposed Development is the focal point of the Proposed Development, while the study area includes any potential hydrogeological / hydrological connections to sensitive receptors including habitats that might experience secondary effects.

The desk study involved collecting all the relevant data for the site and surrounding area including published information and details pertaining to the Proposed Development provided by the Applicant and the design team.

A site walkover survey to establish the environmental site setting and baseline conditions at the site of the Proposed Development relevant to the hydrological and hydrogeological environment was undertaken by DNV on the 28th of January 2025.

The Element 1 stage of the assessment was completed by DNV and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping (EPA, 2025).
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater webmapping (GSI, 2025).
- National Parks and Wildlife Services (NPWS) webmapping (NPWS, 2025).
- Ordnance Survey Ireland (OSI) webmapping (OSI, 2025).
- Water Framework Directive Ireland (WFD) webmapping (WFD, 2025).
- Teagasc webmapping (Teagasc, 2025).
- Office of Public Works (OPW) database on historic flooding and the Catchment Flood Risk Assessment and Management (CFRAM) maps (OPW, 2025).
- Information provided by the Applicant pertaining to the design proposals for the Proposed Development.

Other documents and reports reviewed as part of this assessment included the following:

- Ground Investigations Ireland (GII), 2014. Ground Investigation Report (appended to the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover).
- DNV, 2025a. Construction Environmental Management Plan (submitted with the planning application under separate cover).
- DNV, 2025b. Resource and Waste Management Plan (submitted with the planning application under separate cover).

Element 2: Involves direct and indirect site investigation and studies stage where necessary to refine the CSM developed as part of Element 1 and evaluation of the potential effects associated with the Proposed Development.

Intrusive site investigations were undertaken by Priority Geotechnical Ltd. (PGL, 2025; refer to the Hydrogeological Risk Assessment (HRA) prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1 of the EIAR) between the 23rd and 25th of June 2025 which included borehole drilling and installation of five (5 No.) groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5). Groundwater monitoring at the five (5 No.) newly installed groundwater wells (BH1 through BH5) and surface water monitoring at two (2 No.) locations within the Corbally Stream adjoining the eastern and northern boundaries of the site was conducted by DNV on the 2nd of July 2025. Hydrogeological testing (i.e., slug tests) was also conducted by DNV on the 2nd of July 2025 to assess hydraulic conductivity of the aquifer in the immediate vicinity of selected newly installed groundwater monitoring wells (BH1, BH3 and BH4).

Element 3: Evaluation of Mitigation Measures, Residual Effects and Final Effect Assessment were based on the outcome of the information gathered in Element 1 and Element 2 of the assessment. Mitigation measures to address all identified adverse effects that were identified in Element 1 and Element 2 of the assessment were considered in relation to the construction phase and operational phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual effects.

Element 4: Completion of the Hydrology and Hydrogeology sections of the EIAR in this Chapter which includes all the associated figures and documents.

7.2.4 Description of Importance of the Receiving Environment

The Transport Infrastructure Ireland (TII) criteria for rating of the importance of hydrogeological features at the site as documented in the National Roads Authority Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009), are summarised in Table 7-1.

Table 7-1. Criteria for Rating Site Importance of Hydrogeological Features

Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale.	Groundwater supports river, wetland or surface water body ecosystem protected by European Union (EU) legislation e.g., SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale.	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland, or surface water body. Ecosystem protected by national legislation – e.g., NHA status. Regionally important potable water source supplying >2500 homes. Inner source protection area for a regionally important water source. Quality Class A (Biotic Index Q4, Q5). Flood plain protecting more than 50 residential or commercial properties from flooding.
High	Attribute has a high quality or value on a local scale.	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.

Importance	Criteria	Typical Example
		Quality Class B (Biotic Index Q3-4). Flood plain protecting between 5 and 50 residential or commercial properties from flooding. Locally important amenity site for wide range of leisure activities.
Medium	Attribute has a medium quality or value on a local scale.	Locally Important Aquifer. Potable water source supplying >50 homes. Outer source protection area for locally important water source. Quality Class C (Biotic Index Q3, Q2- 3). Flood plain protecting between 1 and 5 residential or commercial properties from flooding.
Low	Attribute has a low quality or value on a local scale.	Poor Bedrock Aquifer. Potable water source supplying <50 homes. Locally important amenity site for small range of leisure activities. Local potable water source supplying <50 homes. Quality Class D (Biotic Index Q2, Q1). Flood plain protecting 1 residential or commercial property from flooding.

7.2.5 Description and Assessment of Potential Effects

Effects will vary in quality from negative, to neutral or positive. The effects of effects will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'effect' significance and the corresponding 'effect' throughout this chapter are described in Table 7-2 in accordance with EPA, 2022 guidelines on the information to be contained in EIARs.

Table 7-2. Criteria for Assessment of Potential Effects Terminology and Methodology

Quality of Effects/Effects	Definition
Negative	A change which reduces the quality of the environment.
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment.
Significance of Effects / Effects	**Definition**
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Extend and Context of Effects	**Definition**

Extend	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe weather the extent, duration or frequency will conform or contrast with established (baseline) conditions.
Probability of Effects	**Definition**
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration of Effects / Effects	**Definition**
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration
Types of Effects	**Definition**
Indirect Effects	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
Cumulative Effects	he addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
“Do-nothing” Effects	The environment as it would be in the future should the subject project not be carried out
“Worst-case” Effects	he effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Figure 7-1 identifies how comparing the character of the predicted effect to the sensitivity of the receiving environment can determine the significance of the effect.

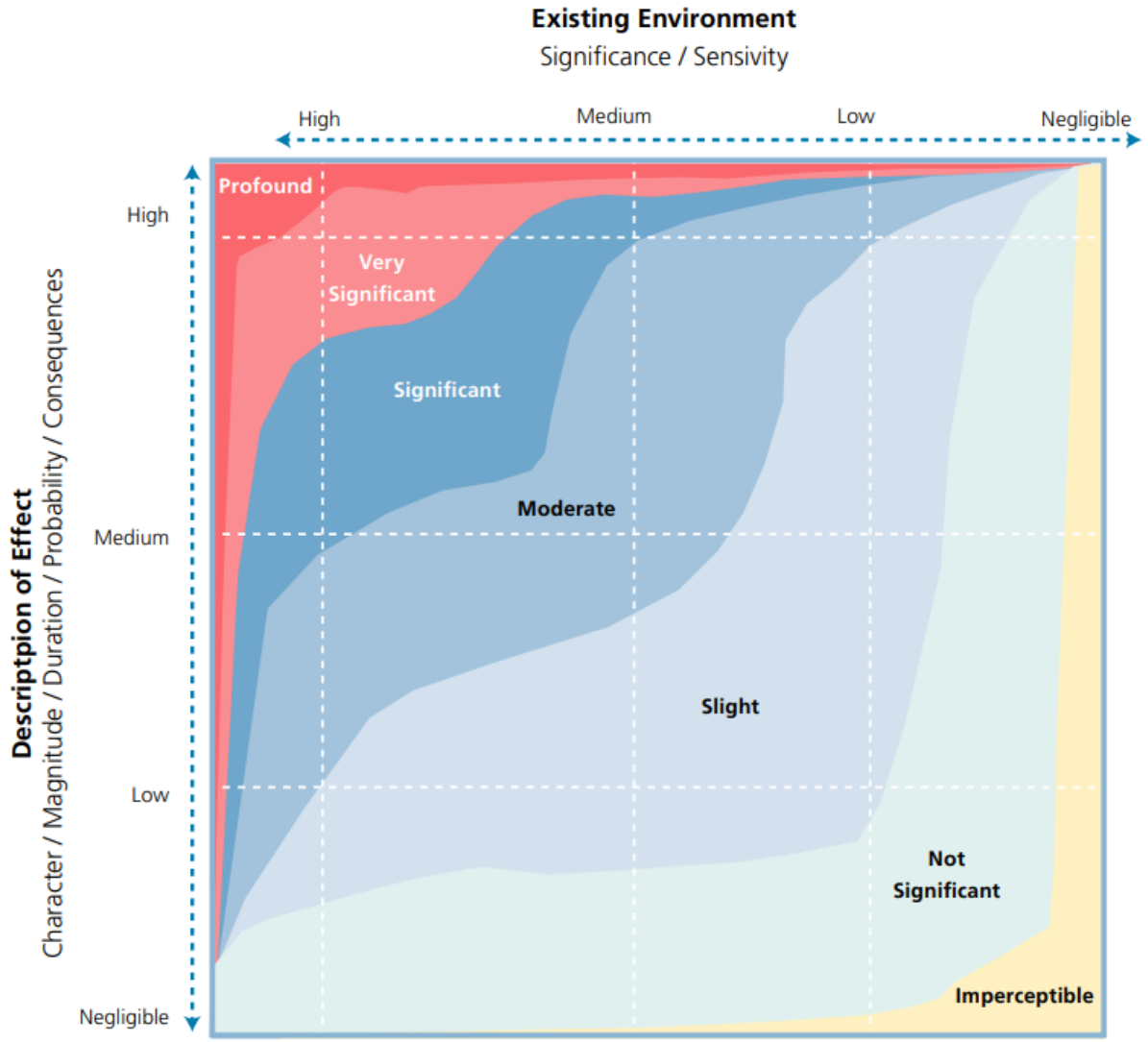

Figure 7-1. Determining Significance

7.3 The Existing and Receiving Environment (Baseline Situation)

7.3.1 Site Location and Description

The site is located to the north of Boherboy Road, approximately 2 km south-west of Tallaght Town Centre, 1 km east of Saggart, 700 m south-west of Citywest Shopping Centre, and 1.6 km south of the N7.

The site comprises approximately 18.7 hectares (Ha) of primarily undeveloped agricultural lands. The lands comprise of two agricultural grassland fields which are separated by a hedgerow and stream. There are three (3 No.) overhead power lines crossing the site (10kV-38kV). The Corbally stream runs along much of the eastern and southern boundary of the site. The Coldwater stream flows along the western boundary, and the Cooldown stream is noted along the central field boundary on the site. The site also comprises a small area of disused grassland, located to the east of the Corbally Stream. Hedgerows and treelines surround the lands. Cattle graze on the agricultural fields, with open cow sheds in the south of the site, adjacent to the entrance.

The land is bound by the Boherboy Road (L2008) to the south, agricultural fields and a single dwelling to the west, Carrigmore residential estate to the north and Corbally residential estate and Carrigmore Park to the east.

The Site location is presented in Figure 7-2 and the current layout of the site is presented in Figure 7-3.

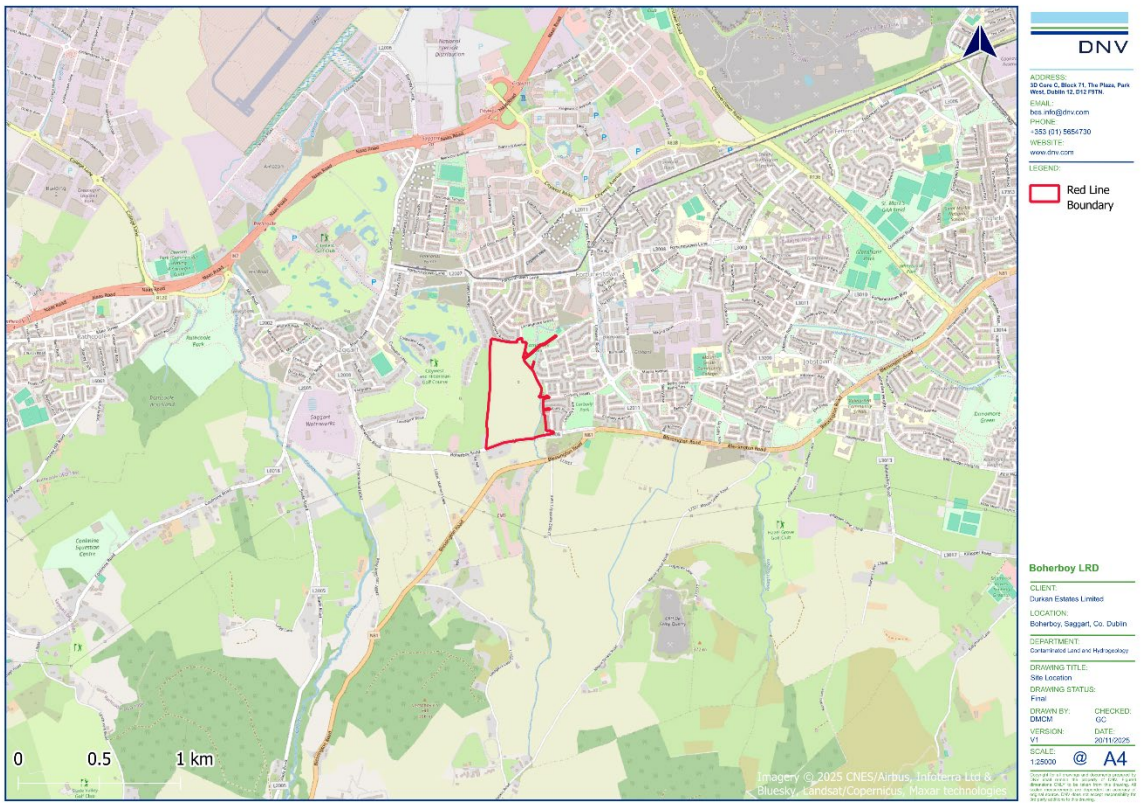

Figure 7-2. Site Location

Figure 7-3. Existing Site Layout

7.3.2 Topography

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025; submitted with the planning application under separate cover), a topographical survey was carried out on the site and indicates that the lands slopes sharply downwards from the south end of the site towards the north. The existing ground level gradients range from 1/7 to 1/30 generally. There is an approximate drop in level of 38m from the highest portion (SW) of the site to the lowest point (NW).

The existing ground topography forms a natural catchment with approximately 75% of the site draining towards the north-west and the remainder draining towards the north-east of the lands. All catchments drain to existing natural watercourses either side of the site.

The existing topography is presented in Figure 7-4.

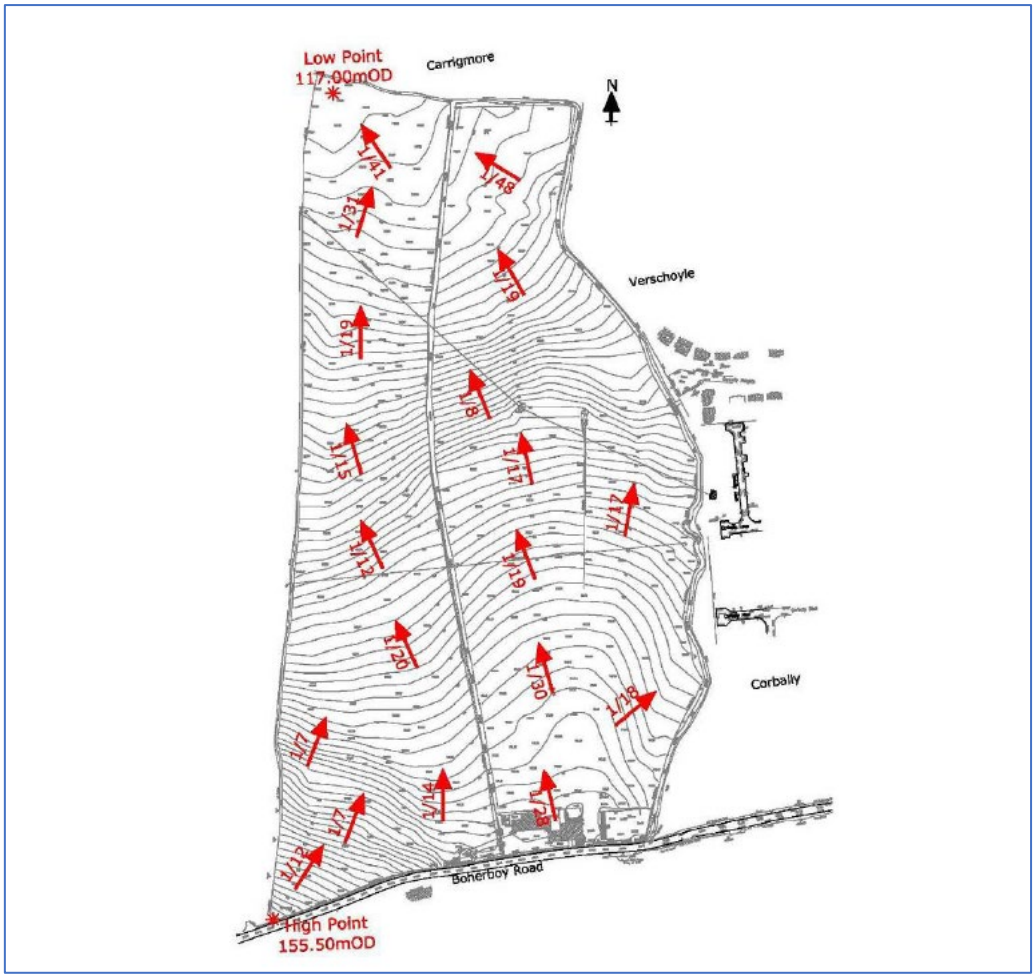

Figure 7-4. Existing Topography (Extract from Roger Mullarkey & Associates, 2025. Drainage and Water Infrastructure Engineering Report)

7.3.3 Soil, Subsoil and Geology

The soils and geology at the subject site are described and assessed in Chapter 6 (Land and Soil) of this EIAR and are summarised as follows:

- The soils beneath the site are mapped by Teagasc (Teagasc, 2025) as deep well drained mineral (mainly acidic), Acid Brown Earths, Brown Podzolics (IFS Soil Code: AminDW) derived from mainly non-calcareous parent materials described as till derived chiefly from Lower Palaeozoic rocks (sandstone and shale till – TLPSsS).
- The subsoil or quaternary sediments beneath the majority of the site are mapped by the GSI (GSI, 2025) as till derived from limestones (TLs). While the subsoil beneath a small portion within the southern boundary of the site is mapped by the GSI (GSI, 2025) as till derived from Lower Palaeozoic sandstones and shales (TLPSsS).
- The bedrock beneath the majority of the site is mapped by the GSI (GSI, 2024) as the Pollaphuca Formation (code SLPLPH) described as coarse greywacke & shale. The bedrock beneath the most northern portion of the site is classified as the Lucan Formation (code CDLUCN) which is made up of dark limestone and shale (‘calp).
- While no bedrock outcrops are mapped within the site boundary, a cluster of bedrock outcrops is located approximately 1.08km south of the site (GSI, 2025).

- There are no karst features mapped by the GSI (GSI, 2025) at the Site or within a 2km radius of the site.

A description of the soil and geology encountered during the intrusive site investigation undertaken at the site (refer to the Hydrogeological Risk Assessment (HRA) prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1 of the EIAR) is discussed in Chapter 6 of this EIAR.

7.3.4 Rainfall

Monthly rainfall data available for 1km x 1km grids (for the period 1991 to 2020), the most up to date long term rainfall dataset, was sourced from Met Éireann (Met Éireann, 2025) and is presented in Table 7-3.

Table 7-3. Long Term Mean Monthly Rainfall Data (mm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
76.3	67	60.8	61.2	62.5	69.4	66.6	75.6	72.3	91.9	98	88.9	890.5
Note: 1km x 1km Irish Grid Coordinated selected for the Site =X (Easting): 305000, Y (Northing): 226000												

The closest synoptic meteorological station to the site for Average Potential Evapotranspiration is at Casement Aerodrome which is located approximately 1.88km northwest of the site and Proposed Development. The average potential evapotranspiration (PE) from the Casement Aerodrome for the period 2022 to 2025 (Met Éireann, 2025) is presented in Table 7-4.

Table 7-4. Average Potential Evapotranspiration (mm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
14.8	20.8	33.9	53.1	73.1	82.4	81.1	68.7	47.3	27.3	14.8	12.3	529.6

7.3.5 Regional Hydrogeology

7.3.5.1 Groundwater Body

The EPA (EPA, 2025) maps the groundwater body (GWB) beneath majority of the site as the Kilcullen GWB (EU Code: IE_EA_G_003). The Kilcullen GWB covers some 642km^2 and occupies an area across Co. Dublin, Co. Wicklow and Co. Kildare (GSI, 2025). The bedrock aquifer beneath the most northern area of the site is mapped by the EPA (EPA, 2025) as the Dublin GWB (EU Code: IE_EA_G_008). The Dublin GWB covers some 837km^2 and occupies an area across Co. Dublin, Co. Kildare and Co. Wexford (GSI, 2025).

Kilcullen Groundwater Body

The Kilcullen GWB Report (GSI, 2025) identifies that the dominant recharge process in this area will be diffuse recharge from water percolating through the overlying tills and into the aquifer. High rates of potential recharge are expected in the hilly areas where there are very thin subsoils and high rainfall. A large portion of this potential recharge will be rejected because the rocks in this area are considered to be poor aquifers with low storativity to accept all the water and therefore, the runoff component to streams will be higher, which can be seen in the very high drainage density in the area.

Groundwater flow is anticipated to principally occur in the top few metres (approximately in the upper 3m of the rocks), mostly within the weathered zone moving laterally towards discharge points such as rivers and springs. However, deeper groundwater flow is possible in some instances within areas of a greater degree of structural deformation which provides a fracture network often encountered (between 10 metres below ground level (mbGL) and 40mbGL). Flow is only anticipated in isolated fractures expected below 30m (GSI, 2025). As discussed in Section 7.3.6, site investigation results indicate that shallow groundwater levels across the site ranged from 1.14mbGL (at BH3 on the 30th of June 2025) to 4.24mbGL (at BH1 on the 2nd of July 2025).

Typical groundwater flow paths are anticipated to be in the order of a couple of hundred metres, with discharge occurring to the closest surface water feature (i.e., overlying streams and rivers as baseflow). Groundwater flow is considered to recharge and discharge on a local scale. Groundwater discharges to the numerous small streams crossing the aquifer, to springs and seeps. Regional groundwater flow paths are not considered to develop, as the rocks do not have sufficient transmissivity to transport water over long distances.

Dublin Groundwater Body

The Dublin GWB Report (GSI, 2025) identifies two (2 No.) different recharge processes, one within Dublin City and the other one recharge in rural areas within this GWB. Recharge is prevented within Dublin City as it is essentially a cement cap on the limestone. The only open areas where recharge may occur are open grassed areas (i.e., parks, squares and gardens). In addition, some recharge occurs from leaking sewers, mains and storm drains. Elsewhere diffuse recharge will occur via rainfall percolating through the subsoil and via outcrops. The proportion of the effective rainfall that recharges the aquifer is determined by the thickness and permeability of the soil and subsoil, and the slope. A high proportion of the recharge will then discharge rapidly to surface watercourses via the upper layers of the aquifer given the low permeability of the aquifers within this GWB, therefore, reducing further the available groundwater resource in the aquifer.

This GWB will discharge directly to the Irish Sea along the coast. Although, there will also be discharge to the overlying gravel aquifers in places and to the overlying rivers, if they are in hydraulic continuity with the aquifer.

Groundwater flow occurs along fractures, joints and major faults. Deeper groundwater circulation is possible given the presence of a number of warm springs within this GWB. The general groundwater flow direction is towards the coast and also towards the River Liffey and Dublin City. This aquifer is not expected to maintain regional groundwater flow paths. The majority of groundwater flow will be a rapid flow within the upper weathered zone near the surface (i.e., likely to be approximately 10mbGL, comprising a weathered zone (i.e., few metres thickness) and a connected fractured zone below the weathered zone). However, flow in conduits is commonly recorded at depths of 30mbGL to 50mbGL. Groundwater circulation from recharge to discharge points will more commonly take place over a distance of less than a one kilometre.

Locally, groundwater flow within the site and vicinity of the site is likely to be toward the Corbally Stream (also known as Brownsbarn Stream), located along the eastern and northern site boundaries and also the Cooldown Stream and Coldwater Stream located along the central field boundary on the site and along the western boundary of the site respectively.

7.3.5.2 Aquifer Classification

The bedrock aquifer within the Pollaphuca Formation (Code: SLPLPH) beneath the site is classified by the GSI (GSI, 2025) as a Poor Aquifer which is generally unproductive except for local zones (Pl). The bedrock aquifer within the northern portion of the site within the Lucan Formation (code CDLUCN) is classified as a 'Locally Important Aquifer (Ll), which is moderately productive only in local zones' (GSI, 2025).

As documented by the GSI (GSI, 2017 A Description of Irish Aquifer Categories), poor aquifers are capable of supplying 'moderate' to 'low' yields (<100m3/day) and groundwater flows occurs predominantly through a limited and poorly connected network of fractures, fissures and joints. While locally important aquifers are capable of supplying locally important abstractions (e.g. smaller public water supplies, group schemes), or 'good' yields (100-400m3/day). Groundwater flow occurs predominantly through fractures, fissures and joints (GSI, 2017).

There are no gravel aquifers mapped by the GSI (GSI, 2025) at the site or within a 2km radius of the site (GSI, 2025).

The bedrock aquifer beneath the Site is presented in Figure 7-5.

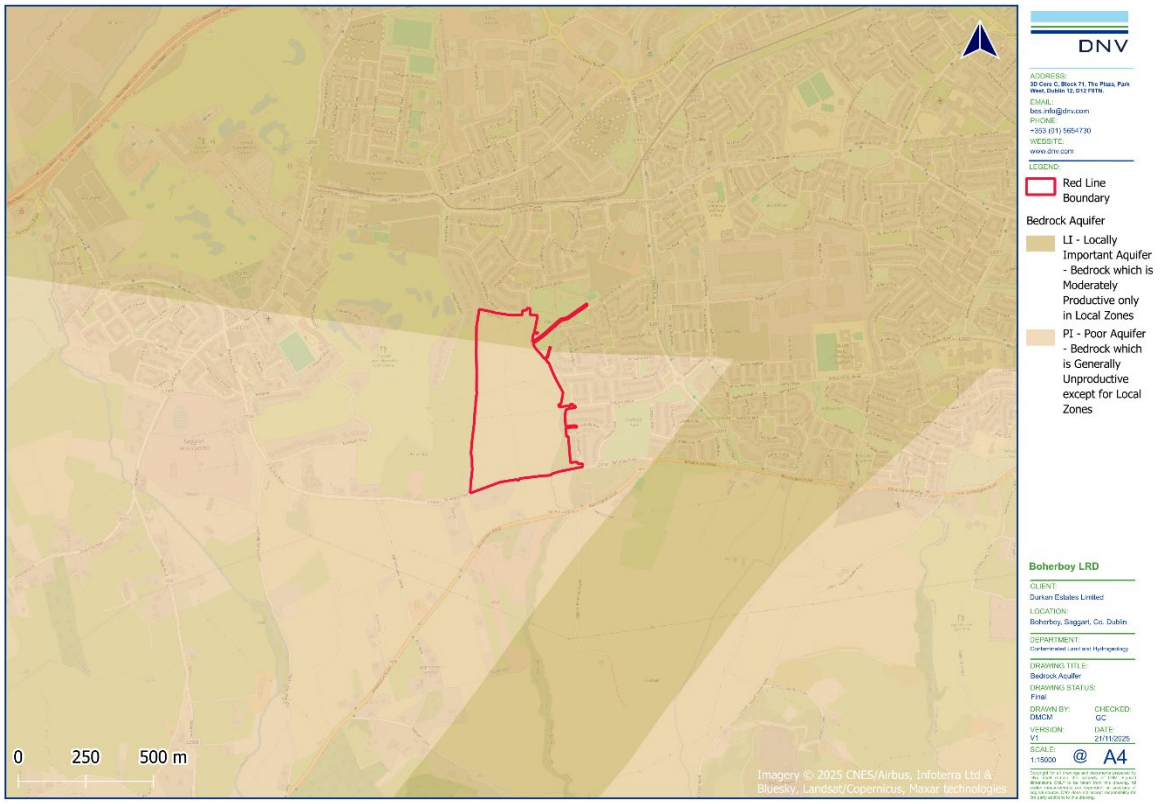

Figure 7-5. Bedrock Aquifer

7.3.5.3 Recharge

The GSI groundwater recharge map provides an estimate of the average amount of rainwater that percolates down through the subsoils to the water table over a year. The map accounts for rainfall that percolates diffusely through soils and subsoils it does not consider water that

enters aquifers at points (e.g., at sinkholes) or along linear features (e.g., along sinking streams/rivers). Groundwater recharge amounts are estimated by considering soil drainage, subsoil permeability, thickness and type, the ability of the aquifer to accept the recharge, and rainfall.

The GSI (GSI, 2025) have calculated a capped recharge of 100mm/year for the aquifer beneath the southern portion of the site and 41mm/year beneath the northern portion of the site based on an effective rainfall (ER) value of 547mm/year and a recharge coefficient of 60% and 8% respectively.

7.3.5.4 Groundwater Vulnerability

The vulnerability categories, and methods for determination, are presented in the Groundwater Protection Schemes publication (DEHLG/EPA/GSI, 1999) and summarised in Table 7-5. The publications state that *'as all groundwater is hydrologically connected to the land surface, it is the effectiveness of this connection that determines the relative vulnerability to contamination. Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly and in lower quantities. The travel time, attenuation capacity and quantity of contaminants are a function of the following natural geological and hydrogeological attributes of any area'*.

Table 7-5. Vulnerability Mapping Criteria

Subsoil Thickness	***Hydrogeological Requirements***				
	Diffuse Recharge			***Point recharge***	***Unsaturated Zone***
	Subsoil Permeability & Type			***(Swallow holes, losing streams)***	***(sand & gravel aquifers only)***
	High permeability (sand & gravel)	***Moderate permeability (sandy subsoil)***	***Low permeability (clayey subsoil, clay, peat)***		
0-3m	*Extreme*	*Extreme*	*Extreme*	*Extreme (30m radius)*	*Extreme*
3-5m	*High*	*High*	*High*	*N/A*	*High*
5-10m	*High*	*High*	*Moderate*	*N/A*	*High*
>10m	*High*	*Moderate*	*Low*	*N/A*	*High*
Notes: (i) N/A = not applicable (ii) Permeability classifications relate to the material characteristics as described by the subsoil description and classification method.					

The GSI has assigned a 'Moderate' permeability rating and a groundwater vulnerability rating of 'Moderate' (M) for the bedrock aquifer beneath the southern part of the site (GSI, 2025). While a 'Low' permeability rating and 'Low' (L) groundwater vulnerability has been assigned to the bedrock aquifer beneath the northern part of the site.

The anticipated depth to bedrock across the site based on the assigned permeability and vulnerability ratings is greater than 10mbGL. As discussed in Section 7.3.6, previous site investigation results indicate that there were cohesive sediments of low permeability (sandy gravelly clay) up to 3mbGL and some lenses of granular deposits present to the south of the site. Bedrock was not encountered during previous site investigations.

The groundwater vulnerability rating map is provided in Figure 7-6.

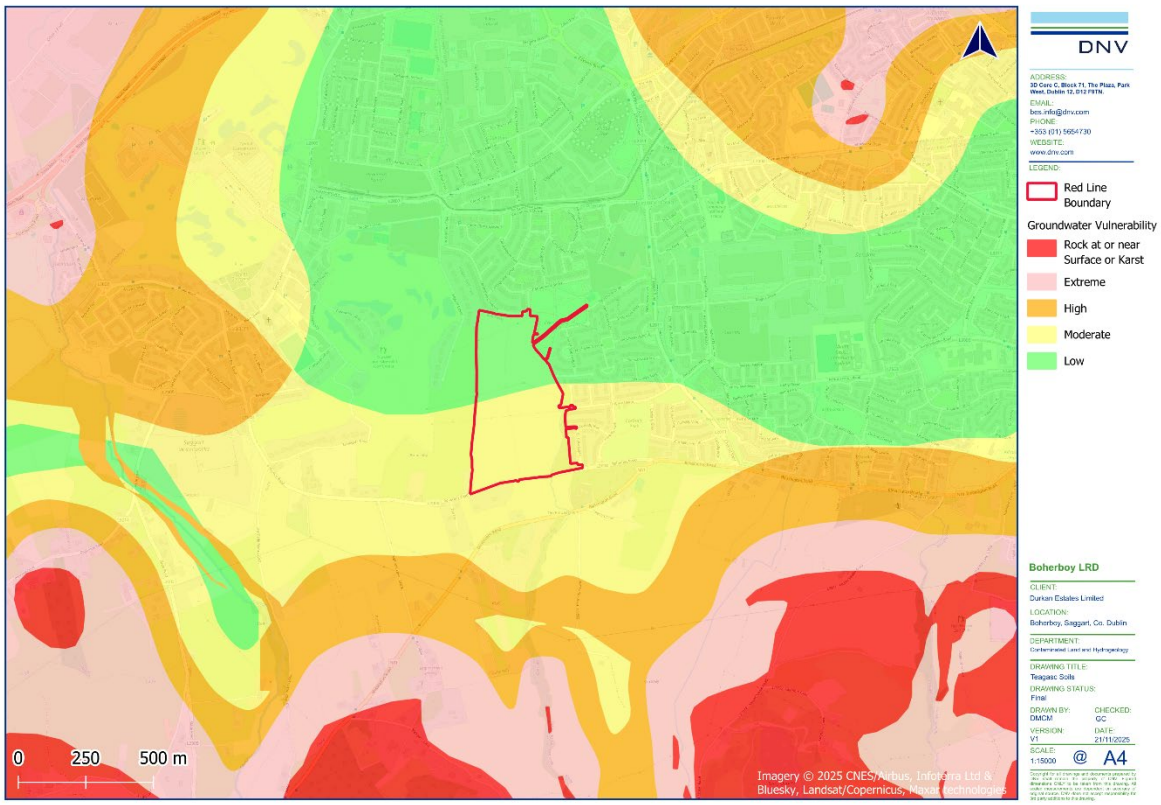

Figure 7-6. Groundwater Vulnerability

7.3.6 Site Investigation Results

7.3.6.1 GII, 2014 Ground Investigation Report

A site investigation was carried out at the site by GII between the 9th and 12th of December 2013 (GII, 2014; appended to the Roger Mullarkey & Associates, 2025 Drainage and Water Infrastructure Engineering Report submitted with the planning application under separate cover).

The scope of the site investigation works consisted of the following:

- Eight (8No.) trial pits excavated to a maximum depth of 3.5mbGL).
- Six (6No.) slit trenches excavated to a maximum depth of 2.5mbGL.
- Nine (9No.) dynamic probes to a maximum depth of 3.3mbGL.
- Four (4No.) soakaway tests to BRE Digest 365.
- Geotechnical and Environmental Laboratory testing.

The site investigation locations are presented in Figure 7-7.

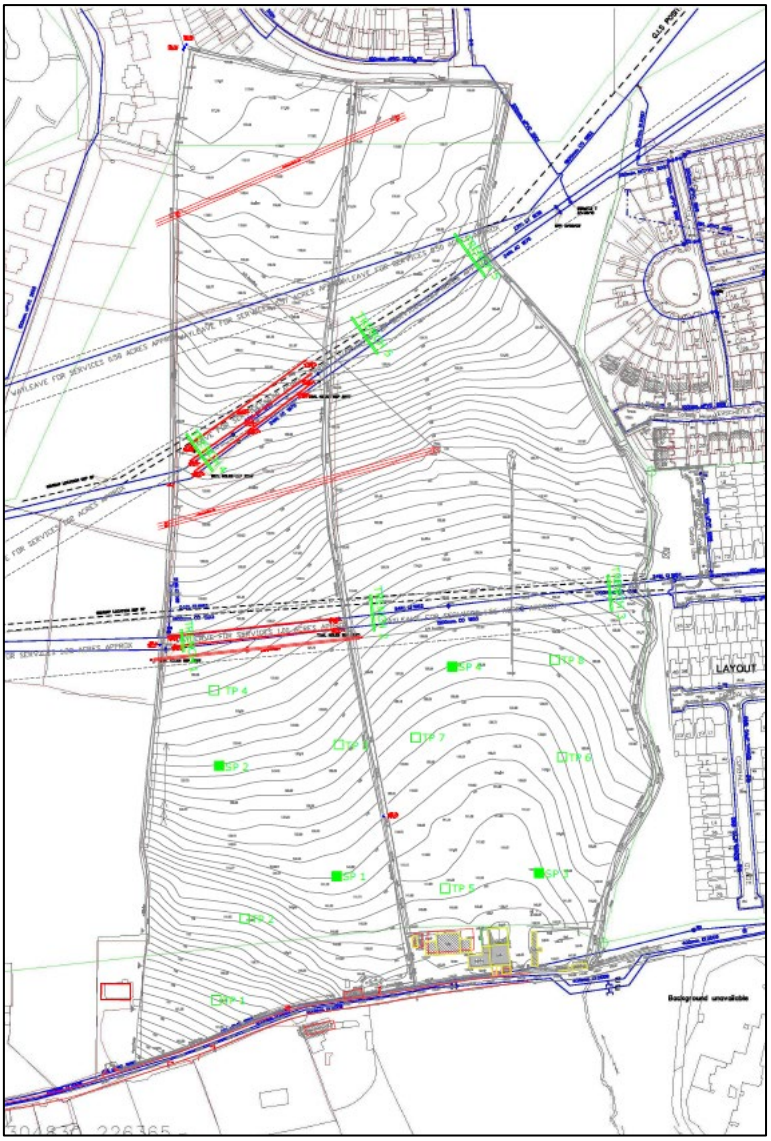

Figure 7-7. Site Investigation Locations (Extract from GII, 2014)

7.3.6.1.1 Groundwater Levels

Groundwater strikes were recorded at depths ranging between 2.0mbGL and 3.0mbGL as slow seepages (GII, 2014).

The site investigation locations were backfilled upon completion and did not remain open for sufficiently long periods of time to establish the hydrogeological regime. It was noted that groundwater levels would be expected to vary with the time of year, rainfall, nearby construction and other factors (GII, 2014).

7.3.6.1.2 Hydrogeological Testing

A total of four soakaway tests (denoted as 4No.) were conducted in accordance with the procedures outlined in BRE Digest 365. These tests were carried out to assess the infiltration capacity of the underlying soil and determine its suitability for soakaway design. Each test involved excavating a trial pit, filling it with water, and monitoring the rate at which the water drained away.

The results of the soakaway testing indicated a soil infiltration rate of 1.38 x 10^{-5}m/s (1.19m/d) in the vicinity of test location SP1 located in the centre of the southern portion of the stie (refer to Figure 7-7). The remaining three (3No.) soakaway tests failed indicating the presence of low permeability subsoils.

7.3.6.2 DNV, 2025 Hydrogeological Assessment

Intrusive site investigations were undertaken by Priority Geotechnical Ltd. (refer to the HRA prepared by DNV (DNV, 2025c) included in Volume 3 Appendix 6.1) between the 23rd and 25th of June 2025 which included borehole drilling and installation of five (5 No.) groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5).

The site investigation locations are presented in Figure 7-8.

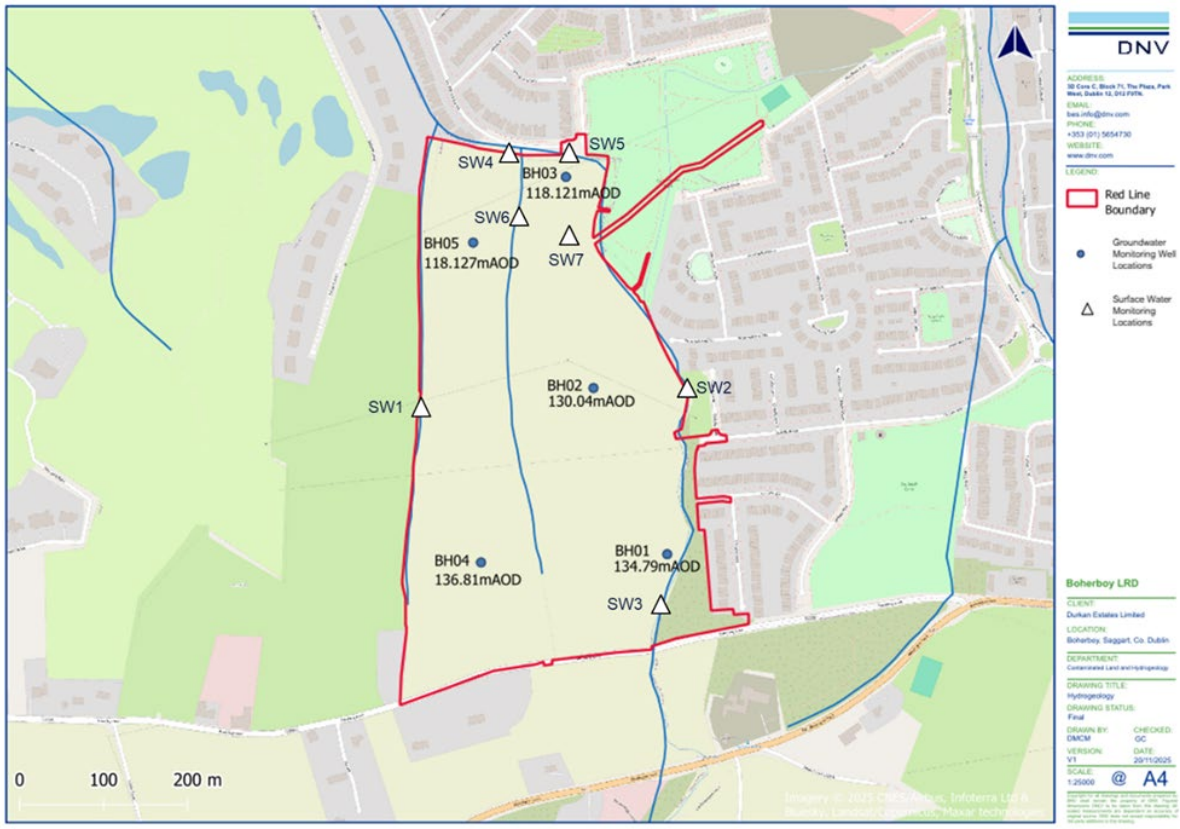

Figure 7-8. Site Investigation Locations

7.3.6.2.1 Groundwater and Surface Water Levels

Gauging of groundwater levels in the newly installed monitoring wells (MW1 through MW5) was completed on the 30th of June 2025 and the 2nd of July 2025. Recorded groundwater levels across the site ranged from 1.14mbGL / 118.221mOD (at BH3 on the 30th of June 2025) to 4.24mbGL / 134.77mOD (at BH1 on the 2nd of July 2025). Refer to Table 6-1 of the HRA (DNV, 2025c) included in Volume 3 Appendix 6.1 for further details.

The invert levels of the stream / drainage channels across the site and at the marshland located in the northeast portion of the site were also surveyed relative to Ordnance Datum (mOD). The recorded elevations in the Corbally Stream (Brownsbarn Stream) ranged from 117.78mOD along the northern boundary of the site to 138.180mOD along the eastern

boundary of the site. Refer to Table 6-2 of the HRA (DNV, 2025c) included in Volume 3 Appendix 6.1 for further details.

7.3.6.2.2 Hydraulic Gradient

As documented in the HRA (DNV, 2025c), a hydraulic gradient of 0.027m/m was calculated in the southern portion of the site, while a steeper hydraulic gradient of 0.053m/m was calculated in the northern portion of the site.

7.3.6.2.3 Groundwater Flow Direction

Based on groundwater elevation data collected from monitoring wells across the site, shallow groundwater flow is interpreted to occur predominantly toward the northwest and northeast, toward the Corbally Stream (also known as Brownsbarn Stream), which borders the eastern and northern boundaries of the site. The inferred groundwater flow direction is presented in Figure 7-9.

The Cooldown Stream, and Coldwater Stream are also considered likely hydraulically connected to the underlying groundwater. This interpretation is based on measured groundwater elevations in close proximity to these streams, suggesting they may be at least partially groundwater-fed. During wetter periods (e.g., winter), rising groundwater levels may enhance this hydraulic connection, increasing baseflow contributions to the streams.

Similarly, the marshland area (invert level: 120.376 mOD) is also considered potentially hydraulically connected to the underlying groundwater. Local groundwater elevations in this area range from approximately 121 mOD to 123 mOD, indicating that the standing water observed in the marshland is likely attributable to both groundwater discharge and surface water runoff.

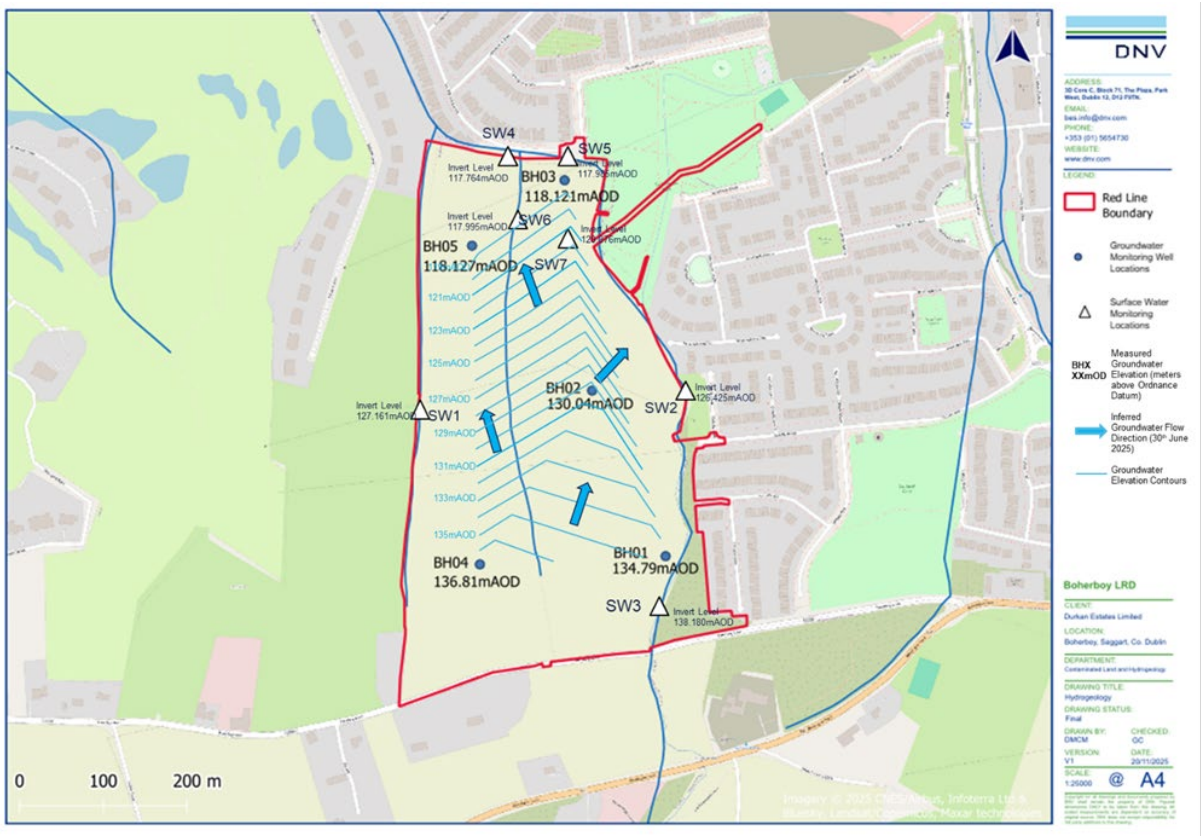

Figure 7-9. Inferred Groundwater Flow Direction (30/06/2025)

7.3.6.2.4 Hydraulic Conductivity

As documented in the HRA (DNV, 2025c), the hydraulic conductivity of the underlying aquifer ranged from 0.147m/d in the south of the site (at BH4) to 1.168m/d in the north of the site (at BH3), which is characteristic of low-permeability strata such as the clay encountered at the site. It is noted that the findings of the soakaway testing undertaken by GII (refer to Section 7.3.6.1.2) are consistent with the results of the permeability testing undertaken by DNV indicating that the presence of low-permeability clay will significantly limit infiltration and recharge potential at the site.

7.3.7 Hydrology

The site of the Proposed Development lies within the Liffey and Dublin Bay Catchment (Hydrometric Area 09) and River Liffey sub-catchment (WFD name: Liffey_SC_090, ID 09_15) (EPA, 2025). The site has been mapped by the EPA (EPA, 2025) to be within the Camac_020 WFD River Sub Basin (IE_EA_09C020250).

The surface water features within the site recorded on the EPA database (EPA, 2025) are as follows:

- The Corbally Stream (also known as the Brownsbarn Stream) (WFD Name: Camac_020; River Waterbody Code: IE_EA_09C020250) is a tributary of the Camac River. It flows along the eastern and northern boundaries of the site in a northerly direction before joining the Camac River approximately 2.1km north of the site. From there, the Camac River continues northeast and discharges into the Liffey Estuary Upper transitional waterbody (WFD Name: Liffey; Transitional Waterbody Code: IE_EA_090_0400) approximately 11.7km northeast of the site. It then flows into the

Liffey Estuary Lower (WFD Name: Liffey; Transitional Waterbody Code: IE_EA_090_0300) approximately 13.7km northeast of the site and ultimately discharges into the Dublin Bay coastal waterbody (Coastal Waterbody Code: IE_EA_090_0000).

- The Coldwater Stream (WFD Name: Camac_020; River Waterbody Code: IE_EA_09C020250) originates along the western boundary of the site, flowing northward before discharging into the Corbally Stream at the site's northern boundary.
- The Cooldown Stream (WFD Name: Camac_020; River Waterbody Code: IE_EA_09C020250) originates within the site and flows in a south-to-north direction, ultimately discharging into the Corbally Stream at the site's northern boundary. It is typically a dry ditch that bisects the site and is believed to be man-made. The stream is inactive under normal conditions and only becomes active during periods of heavy rainfall. Several french drains within the site discharge into the Cooldown Stream, though runoff and infiltration from these drains occur only in the northern third of the stream. The remainder of the channel generally remains dry.

Other surface water features within the vicinity of the site are as follows:

- The Baldonnel_Little (WFD Name: Camac_020; River Waterbody Code: IE_EA_09C020250), located approximately 0.38km west of the site, flows in a northerly direction before conveying to the Camac River approximately 1.3km north of the site.
- The Camac River (WFD Name: Camac_020; River Waterbody Code: IE_EA_09C020250), located approximately 1.37km east and 2.1km north of the site, flows in a northeastern direction before discharging into the Liffey Estuary Upper (WFD Name: Liffey; Transitional Waterbody Code: IE_EA_090_0400) approximately 11.7km northeast of the site, then into the Liffey Estuary Lower (WFD Name: Liffey; Transitional Waterbody Code: IE_EA_090_0300) approximately 13.7km northeast of the site and finally discharging into the Dublin Bay (Coastal Waterbody Code: IE_EA_090_0000) approximately 18.0km east of the site.
- The Baldonnel_Upper (WFD Name: Camac_020; River Waterbody Code: IE_EA_09C020250), located approximately 0.37km east of the site, flows in a northerly direction before conveying to the Camac River approximately 1.30km north of the site.
- The Kingswood Stream (WFD Name: Camac_030; River Waterbody Code: IE_EA_09C020310), located approximately 1.0km east of the site, flows in a northerly direction before conveying to the Camac River approximately 2.8km north of the site.
- The Fortunestown Stream (WFD Name: Camac_030; River Waterbody Code: IE_EA_09C020310), located approximately 0.99km east of the site, discharges into the Kingswood Stream approximately 1km east of the site.

The local surface waterbodies within a 2km radius of the site are presented in Figure 7-10.

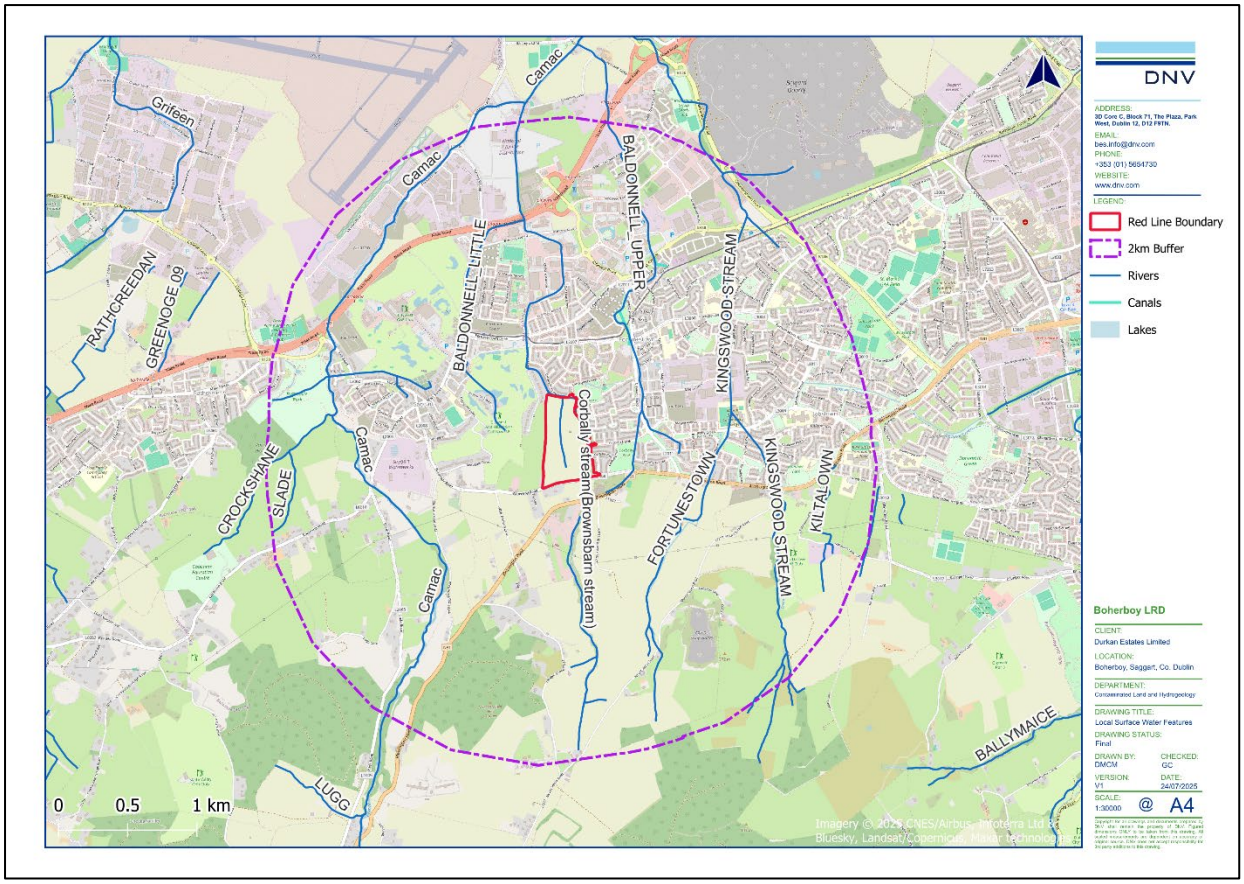

Figure 7-10. Local Surface Water Features

7.3.8 Flooding

The site-specific flood risk assessment (SSFRA) report (Kilgallen & Partners Consulting Engineers, 2025; submitted with the planning application under separate cover) assessed the potential flood risk associated with fluvial, groundwater and pluvial flooding for the site and Proposed Development.

The initial assessment concluded that the site is not at risk from pluvial or groundwater flooding. However, indicators suggested a potential risk from fluvial flooding, prompting a detailed assessment. This confirmed that the northern boundary of the site lies within Flood Risk Zones A and B. To mitigate this, the proposed development incorporates a compensatory storage basin in the northwest corner of the site. While the development will displace floodplain storage in some areas, it lowers ground levels in others, resulting in a net increase in floodplain storage and a slight reduction in flood risk to surrounding areas. Stream crossings have been designed in accordance with OPW requirements, with soffit levels at least 500mm above the 1% Annual Exceedance Probability (AEP) flood level. Two vehicular crossings meet road level constraints and have received OPW Section 50 consent. The proposed floor levels exceed the recommended minimum by 1.90m, and road levels are 1.65m above the required threshold. Additionally, open space adjacent to the Corbally stream has been elevated to maintain a minimum 750mm freeboard above the 1% AEP water level. The development has passed the Development Management Justification Test and is deemed appropriate from a flood risk perspective, with no increased risk to surrounding areas (Kilgallen & Partners Consulting Engineers, 2025).

7.3.9 Groundwater Use and Source Protection

A search of the GSI groundwater well database (GSI, 2025) was conducted to identify registered wells and groundwater sources in the surrounding area. There are no groundwater sources recorded at the site or within a 2km radius of the site (refer to Figure 7-11).

The site of the Proposed Development is located within an area serviced by mains water supply. As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025), there are five (5No.) existing trunk watermains crossing the site as follows:

- A 1.2m dia. (1982 Concrete), a 27inch Ø (1938 Steel) and a 24inch (AC 1975) lie parallel to each other in the northern third of the site
- A 1.2m dia. (1983 Concrete) and 24inch Ø (1952 Cast Iron) lie parallel approximately in the middle of the site.

There are also three (3No.) existing watermains (4inch uPVC/400mmDI/600mmDI) in Boherboy Road to the south of the site.

It is noted that water supply to the Proposed Development will be from a new water connection to the 400mmDI watermain in Boherboy Road. Additionally, water supply for the 10No. “east” Corbally site will be from the existing main in Corbally Rise.

There are no Groundwater Source Protection Areas (SPAs) mapped by the GSI (GSI, 2025) within a 2km radius of the site. The closest Groundwater SPAs is the Kilteel GWS located 5.2km southwest of the site.

There are no surface water drinking water source sites under Article 7 of the Water Framework Directive (EPA, 2025) within 2km of the site. The closest surface water drinking source is the River Dodder (WFD Name: DODDER_020) located approximately 4.3km southeast of the site (EPA, 2025).

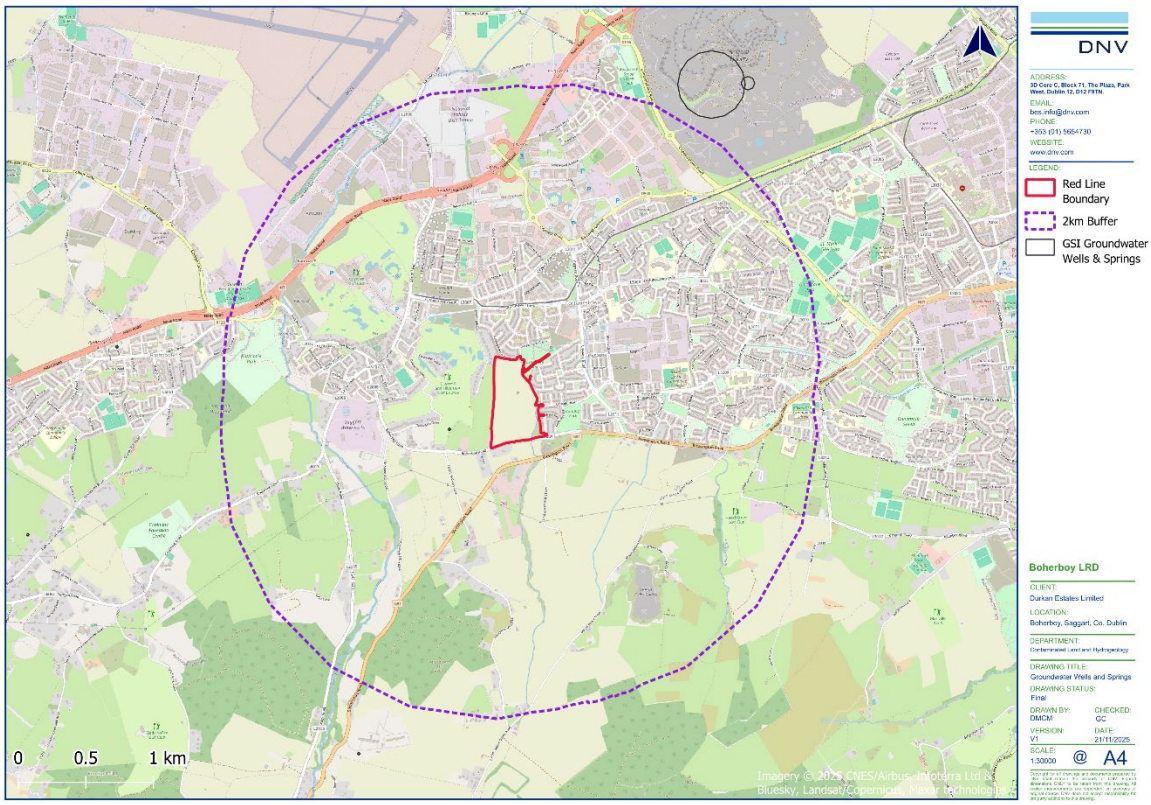

Figure 7-11. Groundwater Wells and Springs

7.3.10 Water Quality Data

7.3.10.1 EPA Surface Water Quality – Q Values

The EPA Q-Value assessment is a system of water quality rating based on the biological quality of the water body and abundance for specific invertebrate species. A summary of the Q values for the operational and historical EPA monitoring locations along the Camac River (EPA, 2025) is presented in Table 7-6.

Table 7-6. Relevant EPA Monitoring Stations and Q-Values

River I.D. & Locations	Sample Locations	Monitoring Station	Q-Value & Year
Camac River (2.92km upstream)	CAMAC - Br 0.5km d/s Brittas pond (NNE of Glenaranean)	RS09C020050	3-4 1986
Camac River (1.28 km downstream)	CAMAC - Br 0.5km d/s Brittas pond (NNE of Glenaranean	RS09C020050	3-4 1986
Camac River (1.63km downstream)	Br 1 km SW (u/s) of Saggart	RS09C020100	3-4 2022
Camac River (1.96km downstream)	CAMAC - Br 1 km NW of Saggart (u/s STW)	RS09C020150	4-5 1991
Camac River (2.5km downstream)	Br SE of Baldonnell Ho	RS09C020250	4 2022
Camac River (4.75km downstream)	CAMAC - End of Cherrywood Aveenue	RS09C020270	3 1988
Camac River (5.4km downstream)	CAMAC - Orchard Lane Just d/s Clondalkin Br	RS09C020300	3 1987

7.3.10.2 EPA Surface Water Quality – Published Regional Surface Water Quality

The EPA surface water quality monitoring database (EPA, 2025) was consulted. A summary of the most recent published EPA water quality monitoring data (EPA, 2025) for waterbodies which have a potential hydraulic connection to the site is presented in Table 7-7.

Table 7-7. EPA Surface Water Quality

River I.D. (Location)	EPA WFD Parameter Quality & Trend Analysis				
	Parameter	**Period**	**Indicative Quality**	**Trend**	**Baseline Conc. (2023)**
Camac_020 River	Ammonia-Total (as N)	Annual	High	Upwards	0.024 mg/l
	Total Oxidised Nitrogen (as N)	Annual	Good	Downwards	1.704 mg/l
	Ortho-Phosphate (as P)- unspecified	Annual	High	Downwards	0.023 mg/l
Camac_030 River	Ammonia-Total (as N)	Annual	Moderate	Upwards	0.099 mg/l
	Total Oxidised Nitrogen (as N)	Annual	Good	Downwards	1.499 mg/l
	Ortho-Phosphate (as P)- unspecified	Annual	Moderate	Upwards	0.044 mg/l
Camac_040	Ammonia-Total (as N)	Annual	Moderate	Upwards	0.161 mg/l
	Total Oxidised Nitrogen (as N)	Annual	Moderate	Downwards	1.853 mg/l
	Ortho-Phosphate (as P)- unspecified	Annual	Moderate	Downwards	0.039 mg/l
Liffey Estuary Upper	Chlorphyll	Summer	High	Downwards	1.950 mg/m^3
		Winter	High	Downwards	0.730 mg/m^3
	Dissolved Inorganic Nitrogen (as N)	Summer	Good	Downwards	0.740 mg/l
		Winter	Poor	Upwards	2.947 mg/l
	Ortho-Phosphate (as P) - unspecified	Summer	Good	Downwards	31.500 mg/l
		Winter	High	Downwards	25.500 mg/l
Liffey Estuary Lower	Chlorphyll	Winter	High	Downwards	0.445 mg/m^3
		Summer	High	Downwards	2.300 mg/m^3
	Dissolved Inorganic Nitrogen (as N)	Winter	Good	Downwards	0.433 mg/l
		Summer	High	Downwards	0.182 mg/l
	Ortho-Phosphate (as P) - unspecified	Winter	Good	Upwards	38.500 mg/l
		Summer	Good	Downwards	32.500 mg/l
Dublin Bay	Chlorphyll	Summer	High	Upwards	1.700 mg/m^3
		Winter	High	Upwards	0.330 mg/m^3
	Dissolved Inorganic Nitrogen (as N)	Summer	High	Downwards	0.030 mg/l
		Winter	High	Downwards	0.120 mg/l
	ortho-Phosphate (as P) - unspecified	Summer	High	Upwards	7.850 mg/l
		Winter	High	Upwards	17.000 mg/l

7.3.10.3 Surface Water Quality (DNV, 2025 Hydrogeological Assessment)

The analytical results (refer to Appendix B of the HRA (DNV, 2025c) included in Volume 3 Appendix 6.1 of the EIAR) for surface water samples collected upstream and downstream of the site are summarised below.

- The reported concentrations of the dissolved metals analysed (arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, magnesium, mercury, nickel, potassium, selenium, sodium, vanadium and zinc) at both surface water locations

(SW3 and SW4) were reported as below the applicable surface water environmental quality standards (SW EQS).

- BOD Concentrations at both monitoring locations were reported below the applicable SW EQS.
- The reported concentration of orthophosphate at both monitoring locations were reported below the applicable SW EQS.
- The reported concentration of ammoniacal nitrogen (0.09mg/L) at downstream location SW4 exceeded the applicable SW EQS of 0.065mg/l. The reported concentration of ammoniacal nitrogen at upstream location SW3 was below the laboratory limit of detection and hence the applicable SW EQS.

The results are considered representative of baseline conditions at the site. The marginally elevated concentration of ammoniacal nitrogen at downstream location BH3 is considered likely attributable to agricultural land use at the site (i.e., grazing of cattle).

7.3.10.4 EPA Groundwater Quality - Published Regional Groundwater Quality

The EPA groundwater monitoring data (EPA, 2025) was reviewed and there are no groundwater quality monitoring stations within a 2km radius of the site or that are hydraulically connected to the site. However, there are recorded groundwater quality data for the groundwater body beneath the site. The groundwater quality data is presented in Table 7-8.

Table 7-8. EPA Groundwater Quality

Groundwater Body	EPA WFD Parameter Quality & Trend Analysis				
	Parameter	Period	Indicative Quality	Trend	Baseline Conc. (2021) (mg/l)
Kilcullen GWB	Ammonia-Total(As N)	Annual	Good	Upwards	0.021 mg/l
	Chloride	Annual	Good	Downwards	15.772 mg/l
	Conductivity@25°C	Annual	Good	Upwards	670.500 us/cm
	Nitrate (as NO3)	Annual	Good	Upwards	19.275 mg/l
	ortho-Phosphate (as P) - unspecified	Annual	Good	Downwards	0.022 mg/l
Dublin GWB	Ammonia-Total (as N) - Ryewater RW2-Deep	Annual	Good	Upwards	0.028 mg/l
	Ammonia-Total (as N) - Ryewater RW3-Deep	Annual	Failing to achieve good status	Upwards	0.151 mg/l
	Ammonia-Total (as N) - Ryewater RW1-Transition	Annual	Failing to achieve good status	Upwards	0.138 mg/l
	Ammonia-Total (as N) - Ryewater RW3-Shallow	Annual	Failing to achieve good status	Upwards	0.118 mg/l
	Ammonia-Total (as N) - Ryewater RW3-Subsoil	Annual	Good	Upwards	0.038 mg/l
	Ammonia-Total (as N) - Ryewater RW2-Shallow	Annual	Good	Upwards	0.024 mg/l
	Ammonia-Total (as N) - Ryewater RW1-Deep	Annual	Failing to achieve good status	Upwards	0.454 mg/l

Groundwater Body	EPA WFD Parameter Quality & Trend Analysis				
	Parameter	**Period**	**Indicative Quality**	**Trend**	**Baseline Conc. (2021) (mg/l)**
	Ammonia-Total (as N) - Ryewater RW1-Shallow	Annual	Good	Upwards	0.039 mg/l
	Ammonia-Total (as N) - Ryewater SW1	Annual	Failing to achieve good status	Downwards	0.109 mg/l
	Ammonia-Total (as N) - Ryewater RW2-Transition	Annual	Failing to achieve good status	Upwards	0.175 mg/l
	Ammonia-Total (as N) - Ryewater RW3-Transition	Annual	Failing to achieve good status	Downwards	0.234 mg/l
	Chloride - Ryewater RW2-Deep	Annual	Good	Upwards	22.160 mg/l
	Chloride - Ryewater RW3-Deep	Annual	Failing to achieve good status	Upwards	25.836 mg/l
	Chloride - Ryewater RW1-Transition	Annual	Failing to achieve good status	Upwards	88.694 mg/l
	Chloride - Ryewater RW3-Shallow	Annual	Good	Downwards	21.539 mg/l
	Chloride - Ryewater RW3-Subsoil	Annual	Failing to achieve good status	Downwards	38.428 mg/l
	Chloride - Ryewater RW2-Shallow	Annual	Failing to achieve good status	Upwards	35.933 mg/l
	Chloride - Ryewater RW1-Deep	Annual	Good	Upwards	18.600 mg/l
	Chloride - Ryewater RW1-Shallow	Annual	Failing to achieve good status	Downwards	49.708 mg/l
	Chloride - Ryewater SW1	Annual	Failing to achieve good status	Downwards	25.580 mg/l
	Chloride - Ryewater RW2-Transition	Annual	Failing to achieve good status	None	110.743 mg/l
	Chloride - Ryewater RW3-Transition	Annual	Good	Downwards	18.603 mg/l
	Conductivity @25°C - Ryewater RW2-Deep	Annual	Good	Upwards	571.567 mg/l
	Conductivity @25°C - Ryewater RW3-Deep	Annual	Good	Upwards	595.389 mg/l
	Conductivity @25°C - Ryewater RW1-Transition	Annual	Failing to achieve good status	Upwards	1024.778 mg/l
	Conductivity @25°C - Ryewater RW3-Shallow	Annual	Good	Upwards	735.250 mg/l
	Conductivity @25°C - Ryewater RW3-Subsoil	Annual	Good	Upwards	762.056 mg/l

Groundwater Body	EPA WFD Parameter Quality & Trend Analysis				
	Parameter	**Period**	**Indicative Quality**	**Trend**	**Baseline Conc. (2021) (mg/l)**
	Conductivity @25°C - Ryewater RW2-Shallow	Annual	Good	Upwards	680.267 mg/l
	Conductivity @25°C - Ryewater RW1-Deep	Annual	Good	Upwards	611.278 mg/l
	Conductivity @25°C - Ryewater RW1-Shallow	Annual	Good	Upwards	725.028 mg/l
	Conductivity @25°C - Ryewater SW1	Annual	Good	Downwards	654.933 mg/l
	Conductivity @25°C - Ryewater RW2-Transition	Annual	Failing to achieve good status	Upwards	1020.233 mg/l
	Conductivity @25°C - Ryewater RW3-Transition	Annual	Good	Upwards	653.5 mg/l
	Nitrate (as NO_3) - Ryewater RW2-Deep	Annual	Good	Downwards	1.089 mg/l
	Nitrate (as NO_3) - Ryewater RW3-Deep	Annual	Good	Downwards	1.452 mg/l
	Nitrate (as NO_3) - Ryewater RW1-Transition	Annual	Good	Upwards	9.662 mg/l
	Nitrate (as NO_3) - Ryewater RW3-Shallow	Annual	Good	Upwards	0.861 mg/l
	Nitrate (as NO_3) - Ryewater RW3-Subsoil	Annual	Good	Downwards	1.255 mg/l
	Nitrate (as NO_3) - Ryewater RW2-Shallow	Annual	Good	Upwards	0.923 mg/l
	Nitrate (as NO_3) - Ryewater RW1-Deep	Annual	Good	Upwards	1.091 mg/l
	Nitrate (as NO_3) - Ryewater RW1-Shallow	Annual	Good	Downwards	2.051 mg/l
	Nitrate (as NO_3) - Ryewater SW1	Annual	Good	Downwards	7.599 mg/l
	Nitrate (as NO_3) - Ryewater RW2-Transition	Annual	Good	Downwards	1.115 mg/l
	Nitrate (as NO_3) - Ryewater RW3-Transition	Annual	Good	Downwards	1.013 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW2-Deep	Annual	Good	Upwards	0.010 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW3-Deep	Annual	Good	None	0.010 mg/l
	ortho-Phosphate (as P) – unspecified -	Annual	Good	Downwards	0.019 mg/l

Groundwater Body	EPA WFD Parameter Quality & Trend Analysis				
	Parameter	Period	Indicative Quality	Trend	Baseline Conc. (2021) (mg/l)
	Ryewater RW1-Transition				
	ortho-Phosphate (as P) – unspecified – Ryewater RW3-Shallow	Annual	Good	Downwards	0.012 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW3-Subsoil	Annual	Good	None	0.010 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW2-Shallow	Annual	Good	None	0.010 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW1-Deep	Annual	Failing to achieve good status	Upwards	0.044 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW1-Shallow	Annual	Good	Upwards	0.010 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater SW1	Annual	Failing to achieve good status	None	0.103 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW2-Transition	Annual	Good	Upwards	0.012 mg/l
	ortho-Phosphate (as P) – unspecified - Ryewater RW3-Transition	Annual	Good	Downwards	0.020 mg/l

7.3.10.5 Groundwater Quality (DNV, 2025 Hydrogeological Assessment)

The analytical results (refer to Appendix B of the HRA (DNV, 2025c) included in Volume 3 Appendix 6.1 of the EIAR) for samples collected at the five newly installed groundwater monitoring wells (BH1, BH2, BH3, BH4 and BH5) are summarised below.

- The reported concentrations of the dissolved metals analysed (arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, magnesium, mercury, nickel, potassium, selenium, sodium, vanadium and zinc) at all monitoring locations were reported as below the applicable Groundwater Target Values (GW GTV) and SW EQS at all monitoring locations.
- The reported concentrations of nitrate and nitrite at all monitoring locations were below the applicable GW GTV of 37.5mg/l ad 0.375mg/l respectively. There are no limits for the SW EQS.
- Sulphate and chloride concentrations at all monitoring locations were reported below the applicable GW GTV. There is no applicable SW EQS for sulphate and chloride.
- BOD Concentrations at all monitoring locations were reported below the applicable SW EQS. There is no applicable GW GTV for BOD.

- The reported concentration of orthophosphate (0.19mg/l) and ammoniacal nitrogen (1.51mg/L) at location BH02, in the central portion of the site, exceeded the applicable GW GTV of 0.035mg/l and 0.175mg/l respectively. The reported concentrations also exceed the applicable SW EQS of 0.035mg/l and/or 0.065mg/l respectively at locations BH2, BH3 (ammoniacal nitrogen only), BH4 (ammoniacal nitrogen only) and BH5 (ammoniacal nitrogen only).
- As documented in the HRA (DNV, 2025c), the results are considered representative of baseline conditions at the site. The elevated concentrations of orthophosphate and ammoniacal nitrogen are likely attributable to agricultural land use at the site, specifically grazing of cattle.

7.3.10.6 Receiving Water Quality – Ringsend WWTP (Wastewater Treatment Plant)

Foul water from the site will discharge via the Ringsend WWTP to the Liffey Estuary Lower transitional waterbody. The WWTP is operated under relevant statuary approvals. The most recent available Annual Environmental Report (AER) for the Ringsend WWTP is 2023 (UE, 2024). The AER identified that the final effluent was non-compliant with the Emission Limit Values (ELV) specified in the discharge license (D0034-01). The parameters falling to meet their ELV's included biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), total phosphorus (as P), total nitrogen and E. coli. It was reported that the non-compliances for all parameters were as a result of overloading with the exception of total phosphorus which was due to no phosphorus removal treatment onsite.

While exceedances of the ELV's is noted, the following is also noted under the significance of results section of the AER:

- *'The primary discharge from the wastewater treatment plant does have an observable negative impact on the water quality in the near field of the discharge and in the Liffey and Tolka Estuaries.*
- *The primary discharge from the WWTP does not have an observable negative impact on the Water Framework Directive status in the Liffey Estuary.*
- *Other potential causes of deterioration in water quality relevant to this area are upstream riverine pollutants, combined sewer overflows, exfiltration from sewers and misconnections to surface water sewers in the large urban agglomeration'*

7.3.11 Water Framework Directive (WFD)

The WFD status for river, lake, groundwater, transitional and/or coastal water bodies that have a potential hydraulic connection to the site as recorded by the EPA (EPA, 2025) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 7-9 and shown in Figure 7-12.

Table 7-9. Water Framework Directive Status

Waterbody Name	Waterbody EU Code	Location from Site	Distance from Site (km)	WFD Status (2019-2024)	WFD Risk	Hydraulic Connection to the Site
Surface Water Bodies						
Camac_020	IE_EA_09C020250	Closest location along the west/east/ and north	Onsite	Good	At Risk	Yes, via groundwater and surface water drainage from the Proposed Development

Waterbody Name	Waterbody EU Code	Location from Site	Distance from Site (km)	WFD Status (2019-2024)	WFD Risk	Hydraulic Connection to the Site
		boundaries and traversing the middle of the site				
Camac_030	IE_EA_09C020310	East	1.1km	Poor	At Risk	Yes, downstream of adjacent surface water bodies (via the Camac_020 River).
Camac_040	IE_EA_09C020500	Northeast	6.48km	Poor	At Risk	Yes, downstream of adjacent surface water bodies (via the Camac_020 and Camac_030 River).
Transitional Water Bodies						
Liffey Estuary Upper	IE_EA_090_0400	Northeast	11.76km	Moderate	Under Review	Yes, downstream of adjacent surface water bodies (via the Camac_020, Camac_030 and Camac_040 Rivers).
Liffey Estuary Lower	IE_EA_090_0300	Northeast	14.16km	Moderate	At Risk	Yes, downstream of adjacent surface water bodies (via the Liffey Estuary Upper).
Tolka Estuary	IE_EA_090_0200	Northeast	18.19km	Poor	At Risk	Weak Potential Hydraulic connection via Liffey Estuary Lower (upstream of the Liffey Estuary Lower)
Coastal Water Bodies						
Dublin Bay	IE_EA_090_0000	Northeast	15.81km	Good	Not at risk	Yes, downstream of adjacent surface water bodies.
Groundwater Bodies						
Kilcullen	IE_EA_G_003	Underlying	0.0	Good	At risk	Yes, underlying the majority of the site
Dublin	IE_EA_G_008	Underlying	0.0	Good	Review	Yes, underlying the most northern part of the site

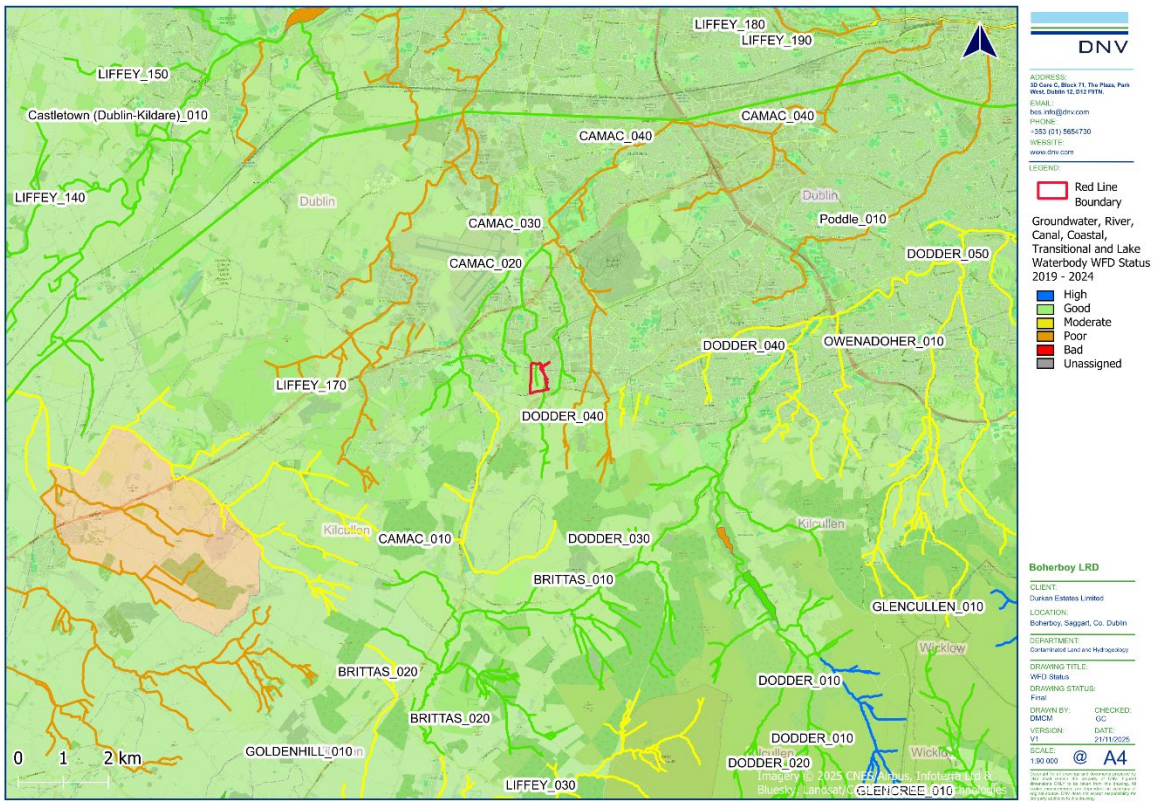

Figure 7-12. Water Framework Directive Status

7.3.11.1 Designated and Protected Sites

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). SACs and SPAs are collectively known as Natura 2000 or European sites (referred to hereafter as Natura 2000 sites).

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

There are six (6No.) Natura 2000 sites that are identified with a potential hydraulic connection to the site and Proposed Development. There are also two (2No.) pNHAs identified with a potential hydraulic connection to the site and Proposed Development. The Natura 2000 sites and other protected and designated sites or areas with a potential hydraulic connection to the site are summarised in Table 7-10 and Figure 7-13. It is noted that the Kilcullen GWB and Dublin GWB beneath the site is considered to have short groundwater flow paths (be in the order of a couple of hundred metres), with groundwater discharging to the closest surface water feature (i.e., the Corbally Stream, the Cooldown Stream and the Coldwater Stream). Therefore, there is no perceived direct pathway from groundwater beneath the site to the identified downgradient Natura 2000 sites and other protected and designated sites.

Table 7-10. Designated and Protected Sites

Designated Site	Site Code	Distance from Site (km)	Direction	Potential Risk
Special Area of Conservation (SAC)				
North Dublin Bay SAC	000206	18.75	Northeast	Yes, hydrological connection via Corbally Stream and downstream waterbodies. There is also a connection via discharge from Ringsend WWTP.
South Dublin Bay SAC	000210	15.66	East	
Rockabill to Dalkey Island SAC	003000	22.59	Northeast	
Special Protection Area (SPA)				
North-West Irish Sea SPA	004236	20.32	Northeast	Yes, hydrological connection via River Dodder and downstream waterbodies. There is also a connection via discharge from Ringsend WWTP.
North Bull Island SPA	004006	19.70	Northeast	
South Dublin Bay and River Tolka Estuary SPA	004024	15.32	East	
Proposed Natural Heritage Area (pNHA)				
Grand Canal pNHA	002104	5.55	North	No identified hydraulic connection. The Camac River is culverted below the Grand Canal.
South Dublin Bay pNHA	000210	15.66	East	Yes, hydrological connection via River Dodder and downstream waterbodies. There is also a connection via discharge from Ringsend WWTP.
North Dublin Bay pNHA	000206	18.75	Northeast	

Note:
'*' = Distance is measured as closest point to the Site

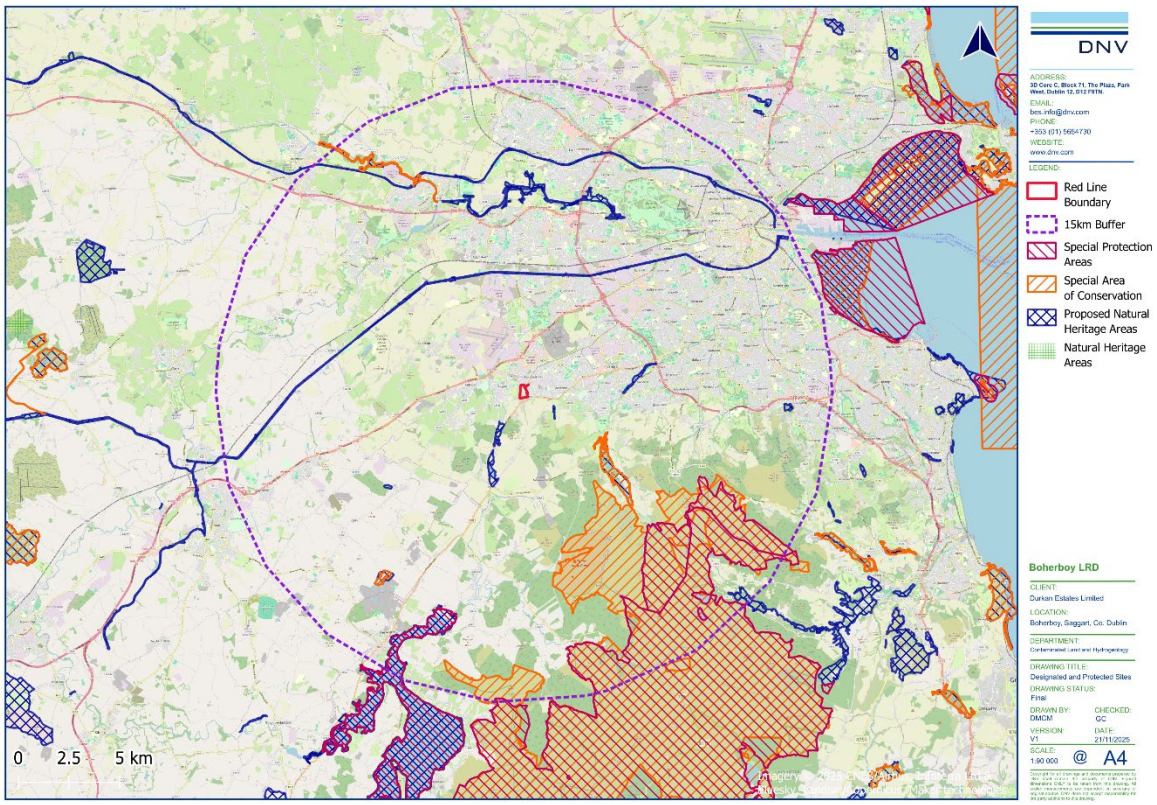

Figure 7-13. Protected and Designated Areas

7.3.11.2 Drinking Water

The river drinking water protected areas (DWPA) are represented by the full extent of the Water Framework Directive (WFD) river waterbodies from which there is a known qualifying abstraction of water for human consumption as defined under Article 7 of the WFD.

There are no surface water drinking water sources, under Article 7 of the Water Framework Directive, identified by the EPA (EPA, 2025) within a 2km radius or hydraulically downstream of the site (refer to section 4.6). However, the groundwater bodies beneath the site, the Kilcullen GWB (IE_EA_G_003) and the Dublin GWB (IE_EA_G_008) are classified under Article 7 Abstraction for Drinking Water.

7.3.11.3 Shellfish Areas

Although the Shellfish Waters Directive (SWD) has been repealed, areas used for the production of shellfish that were designated under the SWD, are protected under the WFD as ‘areas designated for the protection of economically significant aquatic species’.

The requirement from a WFD perspective is to ensure that water quality does not impact on the quality of shellfish produced for human consumption. In Ireland, 64 areas have been designated as shellfish waters (S.I. No. 268 of 2006, S.I. No. 55 of 2009, S.I. 464 of 2009).

The closest designated Shellfish Area location is Malahide (IE_EA_020_0000) located approximately 26.7km northeast of the site.

7.3.11.4 Nutrient Sensitive Areas

EU member states are required under the Urban Wastewater Treatment Directive (91/271/EEC) to identify nutrient-sensitive areas. These have been defined as “natural freshwater lakes, other freshwater bodies, estuaries and coastal waters which are found to be eutrophic or which in the near future may become eutrophic if protective action is not taken”.

The closest designated nutrient-sensitive area (estuaries and lakes) is the Liffey Estuary (IE_EA_090_0300-Urban Wastewater Treatment Directive Sensitive Area) located approximately 10.5km northeast of the site at its closest point. In addition, the closest nutrient-sensitive area (rivers) is the Liffey (Urban Wastewater Treatment Directive Sensitive Area) located approximately 9.4km northeast of the site at its closest point.

7.3.11.5 Bathing Waters

Bathing waters are designated under Regulation 5 of Directive 2006/7/EC. Designated Bathing Waters exist under S.I. No. 79/2008 and S.I. No. 351/2011 Bathing Water Quality (Amendment) Regulations 2011. EC Bathing Water Profiles - Best Practice and Guidance 2009.

The closest designated Bathing Water location is the Sandymount Strand (IEEABWC090_0000_0300) located approximately 15.6km northeast of the site.

7.4 Importance of Receiving Environment

The receiving waterbodies have been assigned a WFD Status of ‘good’ for both groundwater, and the closest surface waterbody hydraulically connected to the site of the Proposed Development (i.e., the Camac_020).

The bedrock aquifer beneath the majority of the site is classified as Poor Aquifer which is generally unproductive except for local zones (Pl). It is noted that the bedrock aquifer beneath the northern portion of the site is classified as a Locally Important Aquifer (Ll), which is moderately productive only in local zones.

The site is not mapped within a groundwater SPA or currently located in the vicinity of a significant water supply source.

Overall, taking account of the receiving hydrological environment, in accordance with the criteria set out in Table 7-1, the site is considered to be of ‘low’ importance.

7.5 Characteristics of the Proposed Development

A full description of the Proposed Development is outlined in Chapter 2 of this EIAR.

The following components are of particular relevance with respect to water during the construction phase and operational phase of the Proposed Development.

7.5.1 Construction Phase

The construction phase of the Proposed Development will include:

- Foundation design will be finalised at detailed design stage. However, it is anticipated that foundation design will consist of traditional strip footings on the underlying firm to stiff cohesive deposits, or the medium dense granular deposits at depths ranging from

1.0 meters below ground level (mbGL) to 2.0mbGL. There may also be a requirement for piling.

- The stripping of existing topsoil at the site.
- The excavation of approximately 184,422m^3 of soil and subsoil for the construction of building foundations, surface water and foul water drainage infrastructure.
- Based on the findings of site investigations carried out across the site (GII, 2014 and DNV 2025c), it is anticipated that there will be no requirement for the excavation of bedrock during the construction phase of the Proposed Development.
- Where possible, it is intended to reuse suitable excavated soil and subsoil for landscaping and engineering use (total fill requirement of approximately 249,228m^3). However, it is anticipated that approximately 103,689m^3 of surplus materials will require removal offsite in accordance with all statutory legislation.
- Temporary stockpiling of excavated material pending re-use onsite.
- It is anticipated that local dewatering will likely be required during the construction of building foundations and utility infrastructure based on recorded groundwater levels with a potential temporary localised change in groundwater levels.
- The importation of approximately 164,654m^3 of aggregate fill materials will also be required for the construction of the Proposed Development (e.g., granular material beneath road pavement, under floor slabs and for drainage and utility bedding / surrounds etc.).
- The construction of 5No.crossings of the Corbally Stream connecting the Proposed Development with the adjoining Corbally and Carrigmore housing estates and the public Carrigmore Park.
- Construction of new foul and mains water connections in accordance with UE Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03), UE's Code of Practice for Water Infrastructure (IW-CDS-5020-03), Building Regulations 2010 and Technical Guidance Documents, Section H.
- Construction of new surface water and groundwater drainage designed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS) and the Greater Dublin Sustainable Drainage System (GDSDS) and the requirements of SDCC.

7.5.2 Operational Phase

7.5.2.1 Surface Water Drainage

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025), surface water from the Proposed Development will be managed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS), the Greater Dublin Strategic Drainage Study (GDSDS), Greater Dublin Regional Code of Practice and South Dublin County Council to treat and attenuate water prior to discharging to the receiving Corbally Stream, Coldwater Stream, and Cooldown Stream.

The surface water drainage is divided into 9No. separate catchment areas, each with its own SuDS interception, treatment, attenuation and storage. There is a potential c.1Ha future school site reserved on the lands that does not form part of this application but has been allowed for in the drainage calculations.

Each of the surface water outfall locations are to include a wing-wall outfall detail, and a non-return valve is to be included at each outfall location to prevent backflow in the event of a swamped outfall condition.

The surface water drainage for the Proposed Development has been designed to cater for surface water runoff from all hard surfaces including roadways, carparks, and roofs, and will adequately accommodate the 2-year, 30 year and 100 year return events over multiple time periods ranging between 15 minutes to 7 day durations. An allowance of an additional 20% for climate change has been applied as has an allowance for 10% urban creep to the rear gardens of the houses.

The following attenuation and SuDS measures will be incorporated into the Proposed Development:

- Rain Garden planters to the rear down pipes of the houses
- Permeable paving to all private parking areas draining roads and front roofs of the houses
- Filter Swales adjacent to roadways where feasible
- Tree pits where practically feasible
- Use of the existing centrally located watercourse and hedgerow as a conveyance swale
- Use of 9No.open detention basins and 1No. below ground system
- Bio-Retention areas draining roads/paths and roofs
- Silt-trap/catchpit manholes
- Hydrobrakes limiting flow to the total Qbar greenfield rate
- Petrol interceptors upstream of all outfall points
- Stone lined voided arch retention storage devices

In addition, land drains will be installed across the site to intercept and convey shallow groundwater towards the receiving Corbally Stream, Coldwater Stream, and Cooldown Stream and the proposed translocated wetland (refer to Roger Mullarkey & Associates, 2025 Drainage Layout submitted as part of the planning application under separate cover) to ensure that the shallow groundwater flow regime is maintained across the site and to support the establishment and long-term viability of the translocated wetland habitat (further details provided in the method statement prepared by Gannon & Associates Landscape Architecture (Gannon & Associates Landscape Architecture, 2025. Marsh Translocation Report; submitted with the planning application under separate cover) and submitted as part of the planning application under separate cover).

The proposed surface water and groundwater catchment summary is presented in Figure 7-14.

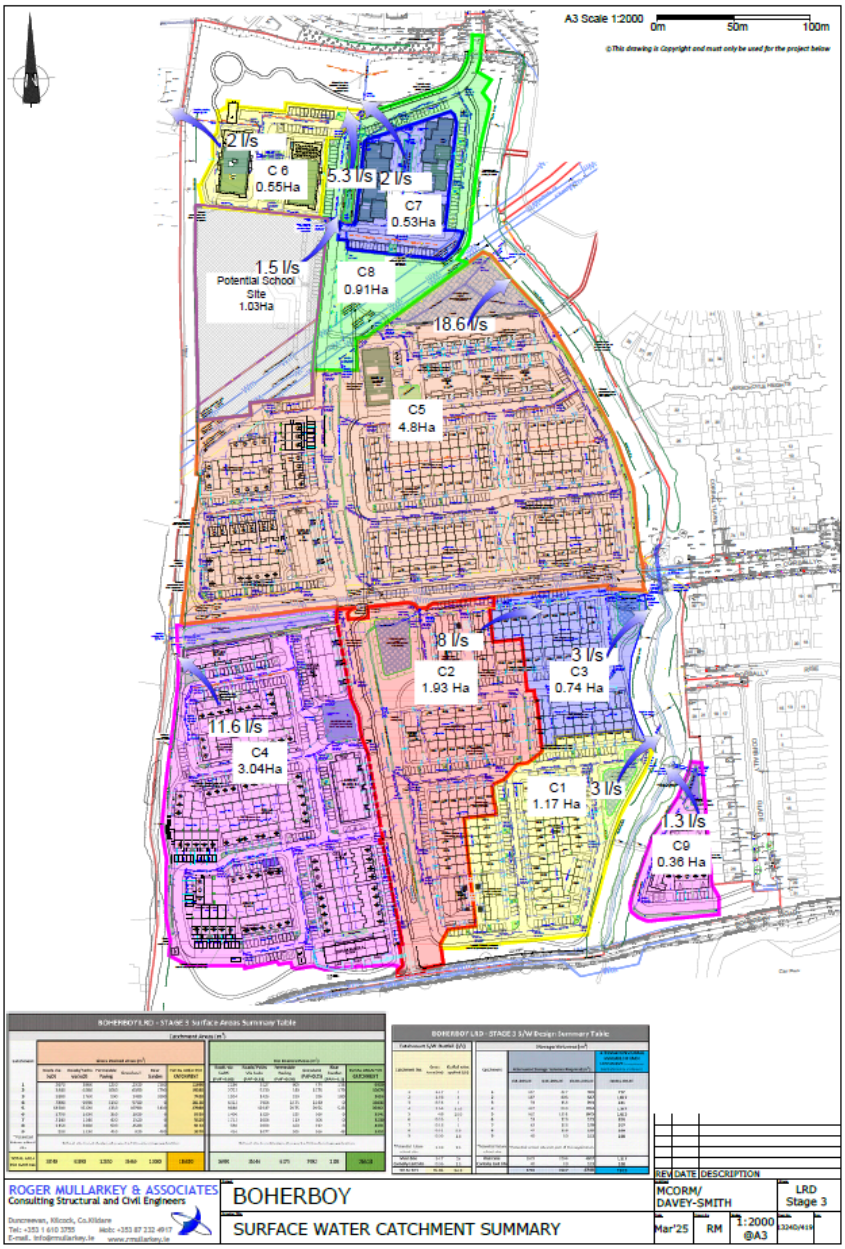

Figure 7-14. Surface Water and Groundwater Catchment Summary (Roger Mullarkey & Associates, 2025)

7.5.2.2 Foul Drainage

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025), foul water from the Proposed Development will be discharged as follows:

- Approximately 75% of the foul water drainage system outfalls by gravity flow into the existing Uisce Éireann (UE) infrastructure located to the east of the site at Verschoyle Green.
- Due to the sloping topography of the subject lands, it is not feasible to drain the apartments on the northern c.25% of the site or potential future school site by gravity. Therefore, a foul water pumping station is proposed
- as part of this application to drain the above blocks from lower NE corner of the site into the gravity sewer to be constructed connecting into Verschoyle Green.

- Foul drainage for the 10No. “east” Corbally site is to connect to the existing foul drainage in Corbally Rise.

The wastewater drainage system's pipework is designed for a design flow of 9.45l/s for residential, 3.66l/s for commercial (Creche and Possible School Site) following UE’s Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03) and standard details.

The proposed foul water drainage layout is presented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025) submitted with the LRD planning application under separate cover.

The UE Confirmation of Feasibility (CoF) letter dated the 21st of January 2025 (UE COF Reference: CDS24005491) states that the proposed foul water connection is feasible subject to upgrades as follows:

- *“Approximately 135m network extension, via private lands, is required from the existing 225m gravity sewer on Verschoyle Green Road to the Development site. Please be advised that at a connection application stage you have to provide evidence of consent of the Third Party Landowners.*
- *Proposed wastewater rising main crossing the existing water pipes must be in accordance with Uisce Éireann Code of Practice and Standard Details (separation distances, crossing under the mains). The details must be approved by Uisce Éireann Diversion Team.*
- *Approximately 154m of 225mm sewer upgrade to a 450mm pipe is required. The sewer section is downstream of the Development site*
- *The Developer will be required to fund the above network extension and upgrade works. The fee will be calculated at a connection application stage.”*

The Applicant will fund all works in agreement and to the satisfaction of UE.

Construction of new foul drainage connections and the proposed foul pumping station will be in accordance with UE’s Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03).

Foul water from the Proposed development will be treated in the Ringsend Wastewater Treatment Plant (WWTP) (Discharge Licence No. D0034-02) before ultimately discharging to the Liffey Estuary Lower transitional waterbody (EU Code: IE_EA_090_0300).

7.5.2.3 Water Supply

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025; submitted with the planning application under separate cover), there are five (5No.) existing trunk watermains crossing the site as follows:

- A 1.2m Ø (1982 Concrete), a 27inch Ø (1938 Steel) and a 24inch (AC 1975) lie parallel to each other in the northern third of the site
- A 1.2m Ø (1983 Concrete) and 24inch Ø (1952 Cast Iron) lie parallel approximately in the middle of the site.

These trunk watermains are in the control of Uisce Éireann. The set-back requirements from these mains are in accordance with the Uisce Éireann Code of Practice for Water Infrastructure 2020 document and extensive discussions were held with Uisce Éireann relating to development in proximity to same.

There are three (3No.) existing watermains (4inch uPVC/400mmDI/600mmDI) in Boherboy Road to the south of the site.

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025), water supply to the Proposed Development will be from a new water connection to the 400mmDI watermain in Boherboy Road. It is noted that water supply for the 10No. “east” Corbally site will be from the existing main in Corbally Rise.

The UE Confirmation of Feasibility (CoF) letter dated the 21st of January 2025 (UE COF Reference: CDS24005491) states that the proposed water supply connection is feasible without infrastructure upgrade from UE.

Construction of new water supply connection will be in accordance with UE’s Code of Practice for Water Infrastructure (IW-CDS-5020-03).

7.6 Potential Impact of the Proposed Development

The procedure for determination of potential effects on the receiving hydrological and hydrogeological environment is to identify potential receptors within the site boundary and surrounding environment and use the information gathered during the desk study, the site walkover and information obtained from direct and indirect site investigations to assess the degree to which these receptors will be effected in the absence of mitigation.

The potential effects associated with the construction phase and operational phase of the Proposed Development are summarised below.

7.6.1 Construction Phase

7.6.1.1 Hydrological and Hydrogeological Flow Regime

During the construction phase there will be no direct discharges to or abstractions from surface water or groundwater at the Proposed Development.

There will be no abstraction of water for use during construction works (i.e. dust suppression, welfare facilities). Water supply will be from mains supply in accordance with a connection agreement from UE and therefore there will be no impact on water resources

Based on the findings of the site investigation undertaken at the site (DNV, 2025c included in Volume 3 Appendix 6.1 of the EIAR), there may be a requirement for management (e.g., localised dewatering or sump pumping) of surface water (rainwater) and shallow groundwater (recorded at levels ranging between ground level (emergence at surface within the marshland) and 4.24mbGL), on a temporary basis where encountered during groundworks. Appropriate construction measures to enable working in the dry during excavations, and methods to minimise the volume of dewatering water generated that will require management will be considered in the detailed design and the contractor's construction methods. Where water must be pumped from the excavations, it is considered that there will be a temporary drawdown of local groundwater levels during the dewatering operations. The dewatering strategy will ensure the expected localised temporary adverse effects on groundwater levels will be maintained within the work area onsite and not extend offsite. Therefore, it is considered that there will be a ‘negative’, ‘slight’ and ‘temporary’ effect on the groundwater levels and flow regime. The overall effect is considered non-significant in the context of the EIA Directive.

Measures will be taken to minimise disruption to the flow during any local diversion of surface water (e.g., the Coldwater Stream) required to facilitate construction of the proposed overflow

to the translocated marshland area. This will include temporary diversion of water flow during construction to prevent flooding and maintain continuous flow, and the use of silt fences and sediment control measures to prevent sedimentation in the watercourse. The impact on the hydrological regime is expected to be 'neutral', 'slight' to 'moderate', and 'temporary' given the interventions will cause short-term changes in flow patterns before returning to baseline conditions with no residual impact. The overall effect is considered non-significant in the context of the EIA Directive.

7.6.1.2 Water Quality

Sources of contamination that could impact on water quality arising from the construction of the Proposed Development include:

- Storage and use of fuels, oils and chemicals used during construction which in the event of an accidental release could infiltrate to the underlying groundwater or migrate via surface water runoff to offsite water bodies.
- Use of concrete and cementitious materials or other potentially hazardous materials during construction in particular for below ground structures and foundations where shallow groundwater may be encountered.
- Runoff with entrained sediment or other contaminants from stockpiled soils onsite to surface water drainage.
- Sediment or contaminants entrained in surface water and groundwater encountered during the dewatering of excavations.
- Release of sediment during in-stream and near stream works required to facilitate construction of the proposed headwalls, overflow to the translocated marshland area and pedestrian / vehicular bridge crossings.
- Accidental release of wash-water or foul water from facilities at the site (e.g., wheel wash and temporary welfare facilities).
- Release of foul water from existing foul water drainage during connection to live sewers.

The potential pathway and pollutant linkages for the construction phase are identified as:

- Infiltration of contaminants to the substrate and bedrock aquifer via potential conduits introduced through groundworks.
- Overland flow during rainfall events entering the receiving waterbodies (i.e., Corbally, Coldwater, and Cooldown Streams).
- Infiltration through subsoils during excavations where the groundwater vulnerability is increased (i.e., the thickness of low permeability materials is reduced thus there is a more direct pathway for surface contaminates to underlying bedrock aquifer).
- Lateral migration within the underlying aquifer.
- Discharge of water (groundwater / surface water runoff) to sewer, watercourses or groundwater in accordance with all statutory requirements and obligations. It is noted that unauthorised discharge of water during the construction phase of the Proposed Development will not be permitted.
- Disturbance of the stream bed and increased suspended solids content of the water downstream of the works area during instream and near stream works.

In the absence of appropriate mitigation measures during the construction phase of the Proposed Development there could be an effect on the receiving water environment including the following receptors:

- Underlying Poor Aquifer (Pl) which is part of the Kilcullen GWB and Locally Important Aquifer (Ll) in the northern portion of the site which is part of the Dublin GWB.
- Downstream receiving waterbodies (i.e., Corbally, Coldwater, and Cooldown Streams).
- There are six (6No.) Natura 2000 sites that are identified with a potential hydraulic connection to the site and Proposed Development. There are also two (2No.) pNHAs identified with a potential hydraulic connection to the site and Proposed Development. The designated and protected sites are assessed and described in further detail in Chapter 5 of the EIAR

Excavation

Potential for infiltration of contaminants to groundwater from surface is limited due to the nature of the bedrock aquifers. During bulk excavations for the construction of building foundations and utility infrastructure in a worst-case unmitigated scenario there is a risk to the underlying bedrock aquifer due to any accidental release of fuels or other contaminates to exposed granular subsoils or bedrock creating a direct pathway to the underlying aquifer. The groundwater within the Kilcullen GWB and / or Dublin GWB will be locally impacted and taking account of the limited attenuation within the aquifer. In a worst case, un-mitigated scenario there is a 'negative', 'significant' and 'long-term' impact to the underlying aquifer depending on the nature of the incident. It is noted that this impact is considered significant in the context of the EIA Directive due to the potential for long-term degradation of groundwater quality in the absence of mitigation.

Local groundwater flow across the site is interpreted to occur predominantly toward the northwest and northeast, discharging into the Corbally Stream (also referred to as the Brownsbarn Stream), which borders the eastern and northern boundaries of the site. The Cooldown Stream and Coldwater Stream are also considered to be hydraulically connected to the underlying groundwater system. In a worst case, un-mitigated scenario there is also an indirect risk via lateral migration in groundwater or overland flow to receiving surface waterbodies (i.e., Corbally, Coldwater, and Cooldown Streams) and locally within the downstream Camac River. In a worst case, un-mitigated scenario there is a 'negative', 'moderate' to 'significant' and 'long-term' impact to the underlying aquifer depending on the nature of the incident. It is noted that this impact is considered significant in the context of the EIA Directive due to the potential for widespread and lasting effects on surface water quality in the absence of mitigation.

Dewatering of Groundwater and Surface Water Runoff

The appointed contractor will ensure that any run-off from the site or any areas of exposed soil will be managed as required with temporary pumping. Where dewatering of excavations is required or where water must be pumped from the excavations, water will be discharged by the contractor, following appropriate treatment (e.g., settlement and / or hydrocarbon interceptor), to sewer, watercourses or groundwater in accordance with the necessary discharge licences issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from Wexford County Council

under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water / groundwater. There will be no unauthorised discharge of water (groundwater / surface water runoff) to sewer, watercourses or groundwater during the construction phase of the Proposed Development. Therefore, the potential impacts will have been adequately assessed and mitigated as part of the statutory consent and there will be 'neutral', 'imperceptible' and 'temporary' impact on the receiving water environment and is considered non-significant in the context of the EIA Directive

In-stream and Near Stream Works

The Proposed Development will include instream and near stream works for the construction of the proposed headwalls to receiving waterbodies (i.e., Corbally, Coldwater, And Cooldown Streams), overflow to the Translocated Marshland Area and bridge crossings to facilitate vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east. There is the potential for some disturbance of the stream bed and increased suspended solids content of the water downstream of the works area. This may result in a 'negative', 'moderate', 'short-term' impact on the receiving surface waterbodies (i.e., Corbally, Coldwater, and Cooldown Streams) and locally within the downstream Camac River.

Surface Water Runoff

Recharge within the Kilcullen Groundwater Body (GWB) and the Dublin GWB is expected to occur predominantly via diffuse infiltration, with rainfall percolating through the overlying subsoils. However, a significant portion of this potential recharge is likely to be rejected, due to the low storativity and low permeability of the underlying bedrock aquifers. Therefore, during rainfall events surface water runoff at the site will drain via overland flow to the receiving Corbally, Coldwater, and Cooldown Streams. During the construction phase of the Proposed Development, there is a potential for release of suspended sediments entrained in surface runoff from groundworks or indirectly tracked on vehicles / machinery entering the receiving waterbodies. There is also a potential risk of runoff with contaminants migrating offsite via existing drainage along public roads. This may result in a 'negative' 'slight to moderate' and 'short- term' impact on the quality of the receiving surface waterbodies. It is noted that this impact is considered non-significant in the context of the EIA Directive, due to its limited spatial extent, short duration, and the implementation of standard construction mitigation measures detailed in Section 7.7.1.

Piling

Piling during the construction phase of the Proposed Development, may potentially create pathways for contaminants such as grout or other materials to enter underlying groundwater. In the event of such scenarios, it is considered that this could result in 'negative', 'moderate' to 'significant' and 'medium-term' impact on a local area of the underlying aquifer environment depending on the nature of the incident. This impact is considered potentially significant in the context of the EIA Directive, however, appropriate controls will be in place to prevent this unlikely scenario.

Removal of Surplus Materials and Waste

All surplus materials and waste that will require removal offsite will be managed in accordance with all statutory obligations including where appropriate re-use as by-product in accordance

with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27). In the unlikely event that surplus soil or other waste materials are directed to an unauthorised location there is potential to impact on the receiving hydrogeology at that location. In the event of such a scenario it is considered that this could result in a 'negative', 'slight to moderate' and 'medium-term' impact on the hydrogeology at any receiving unauthorised locations. This impact is considered potentially significant in the context of the EIA Directive, however, appropriate controls will be in place to prevent this unlikely scenario.

Concrete Works

There is a potential risk associated with the cementitious materials used during the construction of deeper infrastructure where groundwater may be encountered that could result in a 'negative', 'moderate' to 'significant' and 'medium-term' impact on the underlying groundwater quality beneath the site. In the absence of mitigation and considering the potential for adverse effects on the underlying groundwater body, this impact is considered significant in the context of the EIA Directive.

Welfare

Foul water discharge from the temporary welfare units at the site during the construction phase will be either tankered offsite in accordance with waste management legislation or discharged under temporary consent to the UE mains foul network for treatment at Ringsend WWTP subject to agreement with UE. It is considered that any impact on the relating to waste water during the construction phase will be 'neutral', 'imperceptible' and 'temporary' and is considered non-significant in the context of the EIA Directive.

7.6.2 Operational Phase

The assessment of the potential effects on the receiving environment during the operational phase of the Proposed Development will take account of the embedded design avoidance measures (i.e., SUDS design,) to manage the potential for effects to the receiving water environment.

7.6.2.1 Hydrological and Hydrogeological Flow Regime

The Proposed Development will result in an increase of hardstanding on the site.

Recharge potential across the site is limited due to the low storativity and low permeability of the underlying bedrock aquifers. Furthermore, the results of site investigations (GII, 2014 and DNV, 2025c) indicate that the presence of low-permeability clay will significantly limit infiltration and recharge potential at the site. The proposed SuDS include unlined elements allowing for infiltration to ground (though infiltration capacity is limited). This combined with the limited recharge potential across the site means that there will be little to no change to the overall recharge potential to the aquifer. Taking account of the baseline hydrogeological setting and nature of the Proposed Development there will be a 'negative', 'imperceptible' and 'permanent' effect on the hydrogeological flow regime within a very localised zone of the aquifer and is considered non-significant in the context of the EIA Directive.

As documented in the HRA (DNV, 2025c; refer to Volume 3 Appendix 6.1 of the EIAR) the proposed building foundations and attenuation tank have the potential to impede local groundwater flow and movement through the site with potential for groundwater mounding upgradient of structures. Standard design and construction measures that include

incorporating groundwater drainage around impermeable subsurface structures (i.e., building foundations, attenuation tanks and temporary barriers during construction) will minimise adverse effects of groundwater mounding at the upgradient side of the structures and potential buoyancy issues. The proposed drainage which to intercept and locally convey groundwater through the site (refer to the drainage layout drawings presented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025) submitted under separate cover as part of the planning application) will also minimise the potential adverse effects of groundwater on subsurface structures. Therefore, it is considered that there will be a 'negative', 'imperceptible' and 'permanent' effect on the hydrogeological flow regime within a very localised zone of the aquifer and is considered non-significant in the context of the EIA Directive.

As documented in the HRA (DNV, 2025c; refer to Volume 3 Appendix 6.1 of the EIAR), an overflow structure will be constructed from the Coldwater Stream, located centrally within the site, to provide a sustained water supply to the translocated marshland. Water from the marshland will subsequently discharge to the Corbally Stream via both overflow and infiltration to ground, ensuring no net change to the site's overall hydrological regime. Therefore, it is considered that there will be a 'neutral', 'imperceptible' and 'permanent' effect on the hydrological flow regime within a very localised zone of the aquifer. This effect is considered non-significant in the context of the EIA Directive.

7.6.2.2 Water Quality

During the operational phase, there is limited potential for discharge of contaminated runoff to receiving water courses. Surface runoff from roofs and paved areas will be managed and treated in accordance with SUDS and pass through petrol interceptor and attenuation tanks prior to discharging to local surface water drainage network.

There will be no requirement for bulk storage of petroleum hydrocarbon-based fuels during the operational phase of the Proposed Development. Further details are provided in Chapter 13 of this EIAR.

The design of the Proposed Development, including the implementation of the SuDS, aligns with the objectives of the Water Framework Directive (2000/60/EC). The measures incorporated in the SuDS design will be effective in the treatment and removal of any contaminants entrained in surface water runoff. The effectiveness of these SuDS measures is documented in the TII guidance (TII,2014) and the SuDS Manual (C753). The Proposed Development also includes petrol interceptors prior to discharge from the site that will be effective in the removal of hydrocarbons that may enter the drainage system in particular in the event of a worst-case scenario spill incident (e.g. collision on the roadway resulting in the loss of fuel from a vehicle).

Accordingly, any potential effect on receiving surface water and groundwater beneath the site of the Proposed Development will be avoided taking account of the design of the Proposed Development. Therefore, it is considered that the water quality protection criteria and objectives of the GDSDS and Water Framework Directive will be achieved.

In summary, it is concluded that the SuDS drainage strategy for the Proposed Development will result in an overall 'positive', 'slight' 'permanent' effect on receiving surface water quality and groundwater quality.

Foul water from the Proposed Development will be treated in the Ringsend WWTP before ultimately discharging to the Liffey Estuary Lower transitional waterbody. The increase discharge to the Ringsend WWTP as a result of the Proposed Development will reduce the overall available capacity of the facility. Foul water from the Proposed Development will only be discharged to the UE foul sewer under agreement from UE and other applicable statutory consents verifying capacity at the Ringsend WWTP for the Proposed Development. The UE CoF (UE COF Reference: CDS24005491) states that the proposed foul water connection is feasible subject to upgrades. The Applicant will fund all upgrade works and will ensure that all works are completed in agreement with and to the satisfaction of UE prior to connection. Therefore, it is considered that the likely effect on the water quality from wastewater generated onsite runoff will be 'negative', 'imperceptible' and 'permanent' and is considered non-significant in the context of the EIA Directive.

7.6.2.3 Drainage and Flood Risk

The Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025) notes the surface water drainage at the Proposed Development has been designed in accordance with SuDS and satisfies the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) to meet the following design criteria.

- Criterion 1 – River Water Quality Protection.
- Criterion 2 – River Regime Protection.
- Criterion 3 – Level of Service (Flooding) / Flood Risk Assessment.
- Criterion 4 – River Flood Protection.

The SSFRA (Kilgallen & Partners Consulting Engineers, 2025; submitted with the planning application under separate cover) identifies that the Proposed Development is deemed appropriate from a flood risk perspective, with no increased risk to surrounding areas .

As documented in the HRA (DNV, 2025c), the proposed drainage system has been designed with sufficient capacity to accommodate the total estimated 26.07m³/day of intercepted shallow groundwater, confirming that it is appropriately designed to manage anticipated volumes under steady-state conditions and reducing flood potential.

Therefore, it is considered that the potential flooding impacts associated with the Proposed Development are 'neutral', 'imperceptible' and 'long-term' and are considered non-significant in the context of the EIA Directive.

7.6.2.4 Hydrogeological Hazards

Given the shallow groundwater table across the site, there may be an increase in hydrostatic pressure which can reduce the void space of below ground infrastructure, and result in buoyancy and structural integrity risks for subsurface structures. The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which will include measures to counter buoyancy of tanks and subsurface structures and ensure that the site will be suitable for use for the operational phase as a residential development taking account of the hydrogeological site setting. The predicted effects are considered to be 'neutral,' imperceptible' and 'permanent' and are not significant in the context of the EIA Directive.

7.6.3 Potential Cumulative Impacts

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

As part of this assessment, other offsite developments and proposed offsite developments as detailed in Chapter 2 of this EIAR were reviewed and considered for possible cumulative effects with the Proposed Development.

7.6.3.1 Water Resources

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025; submitted with the planning application under separate cover), water supply to the Proposed Development will be from a new water connection to the 400mmDI watermain in Boherboy Road. It is noted that water supply for the 10No. “east” Corbally site will be from the existing main in Corbally Rise. The UE CoF (UE COF Reference: CDS24005491) confirms that the proposed water supply connection is feasible without infrastructure upgrade from UE. The mains water supply will be operated in accordance with relevant existing statutory consents therefore there will be no cumulative effects associated with the Proposed Development on the supply network and water resources.

7.6.3.2 *Water Quality*

As documented in the Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025), foul water from the Proposed Development will be discharged to the mains foul network for treatment in the Ringsend WWTP (Discharge Licence No. D0034-02).

The UE CoF (UE COF Reference: CDS24005491) states that the proposed foul water connection is feasible subject to upgrades. The Applicant will fund all upgrade works and will ensure that all works are completed in agreement with and to the satisfaction of UE prior to connection.

The Ringsend WWTP is operated in accordance with relevant statutory approvals issued by UE. While it is noted there is an exceedance in effluent above the discharge license ELVs, as specified in the 2023 AER, it is noted that while the WWTP has an observable impact on the water quality in the in the near field of the discharge, in the Liffey Estuary Lower and the Tolka Estuary, it does not have an observable impact on the Water Framework Directive status. The increase discharge to the Ringsend WWTP as a result of the Proposed Development is considered to be insignificant in terms of the overall scale of the facility. The increased load does not have the capacity to alter the effluent released from the WWTP to such an extent as to result in likely significant effects on its receiving waters. In addition, upgrade works are currently on-going at Ringsend WWTP to increase the capacity of the facility from 1.6 million PE to 2.4 million PE. This plant upgrade will result in an overall reduction in the final effluent discharge of several parameters from the facility including BOD, suspended solids, ammonia, DIN and MRP (UE (formerly Irish Water), 2018). Foul water from the site will only be discharged to the UE network under the appropriate consents from UE and therefore, the

Proposed Development will have no cumulative impacts individually or in-combination on the receiving water quality and WFD status.

Considering the design of the surface water drainage network in accordance with the principles and objectives of SuDS and the GDSDS to treat and attenuate water prior to discharging offsite, it is considered that there will be no cumulative impacts to the water quality and WFD status of receiving hydrological receptors including the Corbally, Coldwater, and Cooldown Streams and downstream waterbodies individually or in-combination with other developments detailed in Chapter 2 of this EIAR and within the Greater Dublin Area.

7.6.4 "Do Nothing" Impact

In the "Do Nothing" Scenario, it is assumed that the Proposed Development does not proceed. In this scenario it is considered that the site would remain as undeveloped lands in the immediate term., however, the potential for future development remains. As such, even in the absence of the Proposed Development, it is considered that the types of construction and operational phase impacts assessed in this chapter of the EIAR may still occur in the future, albeit under a different development proposal. In this scenario, the current assessment remains relevant as an indication of the likely nature and scale of impacts associated with the development on the site.

7.7 Avoidance, Remedial & Mitigation Measures

The mitigation measures outlined below will ensure that there will be no significant effect arising from the Proposed Development on the receiving groundwater and surface water environment and associated receptors (e.g., Natura 2000 sites). Therefore, the Proposed Development will not have any effect on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations (S.I. 272 of 2009 and as amended) and the European Communities Environmental Objectives (Groundwater) Regulations (S.I. No. 9 of 2010 and as amended) individually or in combination

7.7.1 Construction Phase

A Construction Environmental Management Plan (CEMP) has been prepared by DVN (DNV, 2025a; submitted with the planning application under separate cover). The CEMP will address construction environmental management during the construction phase of the Proposed Development. Following appointment, the contractor will be required to further develop the CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001).

The CEMP will take cognisance of measures outlined in the EIAR and will be implemented for the duration of the construction phase, covering construction management activities that will take place during the construction phase of the Proposed Development.

Mitigation works will be adopted as part of the construction works for the Proposed Development. The measures will address the main activities of potential impact which include:

- Control and management of water and surface runoff.
- Control and management of shallow groundwater during excavation and dewatering

- Management and control of soil and materials.
- Control of management of in-stream or near stream works.
- Control of management of materials from off-site sources.
- Control and management of piling.
- Appropriate fuel and chemical handling, transport and storage.
- Management of accidental release of contaminants at the site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice. Good construction management practices will minimise the risk of pollution from construction activities at the subject site including but not limited to:

- Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA, 2015. Environmental Good Practice on Site (C741).
- Enterprise Ireland Oil Storage Guidelines (BPGCS005).
- Environmental Protection Agency (EPA), 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.
- CIRIA, 2007. The SuDS Manual (C697).
- UK Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG).
- CIRIA, 2006. Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648).
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

7.7.1.1 Control and Management of Instream Works and Works Adjoining Watercourses

All open waterbodies at the site including the Corbally, Coldwater, and Cooldown will be protected for the duration of the works.

A 20m buffer will be retained at all open waterbodies. Site traffic will only be permitted within this buffer to facilitate instream and near stream works for the construction of the proposed headwalls to receiving waterbodies (i.e., Corbally, Coldwater, And Cooldown Streams), overflow to the Translocated Marshland Area and bridge crossings to facilitate vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

Buffer zones will be established by erecting a silt fencing or bunding along the length of the open waterbodies (i.e., Corbally Stream, Coldwater Stream, and Cooldown Stream) with cognisance to Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016). Silt fencing will comprise wooden posts and double walled geotextile membrane buried in an ‘L’ shape to a minimum depth of 250mm. The silt fencing will act in filtering any potential surface water run-off from the site generated during the proposed works and will be retained in place for the duration of the construction phase until the development is complete. Heras fencing will be installed in front of the silt fencing at the Site to prevent “Site creep”, the progressive movement of site activities towards this silt fence. The project specific CEMP (which will be prepared by the main

contractor in advance of construction works commencing) will identify how this silt curtain is to be installed and maintained throughout the construction phase.

The silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the Environmental Manager. The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of the open waterbodies and during and after storm events. Weekly or bi-weekly checks may be appropriate at other times.

All instream works or works carried out in or adjacent to the the Corbally, Coldwater, and Cooldown Streams will adhere to the Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016), the Transport Infrastructure Ireland (TII) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008) and CIRIA C648 Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

All instream works will include the following measures:

- Road stream crossings will be box culverts in design due to the associated site constraints (i.e., the presence of trunk watermains at the location of the proposed crossings and the requirement for the achievement of greater than minimum vertical separation), the requirement to tie into existing roads, and the narrow width of the watercourse on site. Embedded culverts will be buried to a depth of 500mm below the stream bed at the natural gradient, and will be back filled with clean gravel to match the existing stream profile. The culvert will be sized to maintain the natural channel width. The stream crossings will be implemented as per a method statement developed by the appointed contractor in advance of construction works commencing and agreed with IFI as required.
- All works for the proposed translocation will be undertaken in accordance with the method statement prepared by Gannon & Associates Landscape Architecture (Gannon & Associates Landscape Architecture, 2025. Marsh Translocation Report; submitted with the planning application under separate cover). These works will be undertaken in advance of other construction works commencing and the contractor will ensure that appropriate temporary rewatering is utilised as appropriate until the proposed drainage network is established.
- A suitably qualified Ecological Clerk of Works (ECoW) will be present on-site during works for the construction of the overflow to the Translocated Marshland Area.
- Entry to the Corbally Stream by vehicles will be avoided, while vehicle usage along the banks will be restricted as much as practicable. Any machines working in close proximity of the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- Works will be carried out from the bank side, as best practice in-stream works will be restricted to the period 1st July through 30th September, to comply with the seasonal restrictions in salmonid rivers.
- Temporary diversion of water flow may be required to maintain continuous flow and prevent flooding during the connection process.

- Silt traps will be staggered along the length of the overflow, and not only at the lower reaches towards its outflow into the translocated wetland. Silt trap design can vary, from depressions added to the watercourse bed, to log sections laid lengthways into the drain, to the use of geotextile barriers. Once silt traps and silt fences become functional, they will be checked regularly and maintained as necessary, in order to ensure continued effectiveness throughout operations.
- Additional silt fences and other sediment control measures will be utilised as required to prevent sedimentation in the Corbally Stream.
- Regular monitoring of water quality upstream and downstream of the works area will be undertaken by the ECoW to detect any changes and take corrective actions if necessary.
- Existing vegetation will be preserved where possible and replant disturbed areas promptly to stabilize soil and reduce erosion.

Furthermore, works during the construction of the outfalls to the Corbally, Coldwater, and Cooldown Streams will include the following measures:

- The outfall headwalls will be constructed from precast concrete to allow their construction off site, while hoisting of the structure will be carried out from the site side of the riverbank.
- Once excavations for the outfall trenches are complete, the base and sides of the trenches will be seeded with a native wetland wild flora seed mix which will be allowed to establish for a 6–8-week period prior to the outfall trench becoming operational and receiving surface waters from the onsite drainage network. This is a grass mix with some wildflower elements which will aid the overall biodiversity approach/green infrastructure and provide “green” erosion prevention of the outfall channel and prevent siltation of the Corbally, Coldwater, and Cooldown Streams.

The contractor will employ an Environmental Clerk of Works (EnCoW) who will monitor water quality upstream and downstream of the area of works. The programme of water quality monitoring and locations of sampling will be agreed with SDCC in advance of construction works commencing. However, it is anticipated that data on pH, electrical conductivity, and turbidity, suspended solids and hydrocarbons will be collected as follows:

- Twice weekly visits during general site works
- Daily site visits during key construction activities (to be agreed between the environmental specialist, the appointed contractor and SDCC (e.g., during the construction of the translocated wetland, during installation of the proposed outfalls and stream crossings, during and immediately after clearance of on-site vegetation)).
- Event inspection (e.g., following heavy rainfall events or during concrete pours).

Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations will be agreed at commencement and based on the baseline established in the two months prior to works commencing. It is noted that where a deterioration in water quality is observed downstream of the site this will be brought to the attention of the contractor by the Environmental / Ecological Clerk of Works, and any suitable contingency measures will be instigated.

All monitoring data will be collated by the EnCoW to show trends for indicator parameters pH, conductivity, turbidity or suspended solids and hydrocarbons, and will be shared with SDCC as requested.

7.7.1.2 Control and Management of Water and Surface Runoff

There will be no direct discharge to groundwater or surface water during the construction phase of the Proposed Development.

Surface water runoff management will be required to prevent runoff entering excavations during construction. Surface water will require diversion around the open excavations using standard temporary drainage methods to ensure that surface water is effectively conveyed around works areas and with no adverse effects to the overall existing surface water flow regime.

Where dewatering of shallow groundwater is required or where surface water runoff must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the OCEMP (DNV, 2025), the project specific CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.

All run-off from the Site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required (e.g., settlement ponds, silt traps, silt busters, silt socks and / or hydrocarbon interceptors). Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to temporary onsite settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge at a controlled rate.

As mentioned in Section 7.7.1.1, silt fencing or bunding will be installed along the boundaries of all onsite and adjoining waterbodies including the Corbally Stream, Coldwater Stream, and Cooldown Stream.

Stockpiles of loose materials pending re-use onsite or removal offsite will be located as far as feasible from the Corbally Stream, Coldwater Stream, and Cooldown Stream (a minimum set back of 20m from watercourses will be maintained) and will be appropriately sealed / covered and a silt fence or bunding will be installed around it to ensure no soils and sediments are washed out overland to the receiving surface waterbodies. The silt fence or bunding will be installed on three sides of the stockpiled material with access from the fourth (up-hill) side.

The performance of all surface water management measures including settlement ponds and silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed development. Where necessary, maintenance will be carried out to ensure that the measures continue to be effective. This will be particularly important after heavy rainfall events.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. The Appointed contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by Uisce Eireann (UE) under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from South Dublin County Council (SDCC) under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released to ground or to drains. Existing surface water drainage located along public roads will be protected for the duration of the works to ensure that any untreated wastewater generated onsite does not enter the public sewers.

There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Where necessary, surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction.

The appointed contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden runoff is higher during these weather conditions, no work will be carried out during such periods where possible.

Public roads outside the site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all lorries will be cleaned prior to leaving the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

Discharge from any vehicle wheel wash area is to be directed to an onsite settlement tank for discharge to the UE foul network (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor. Any debris or sediment within the wheel-wash will be emptied periodically for disposal offsite at a licenced facility.

7.7.1.3 Concrete Works

The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the appointed contractor and in accordance with the project specific CEMP (DNV, 2025a) and relevant industry standards.

Where possible precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths etc.), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater and surface water.

The following mitigation measures will be implemented.

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.

- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

Weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

7.7.1.4 Piling

The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how the proposed piling methodology will minimise the potential for the introduction of any temporary conduit between any potential sources of contamination at the ground surface and underlying groundwater. The piling method will include procedures to ensure any potential impact to water quality is prevented, including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation. Where there is a requirement to use lubricants, drilling fluids or additives, the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

7.7.1.5 Handling of Fuels and Hazardous Materials

Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite).

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. It is noted that the use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism.

Bunds will have regard to Environmental Protection Agency guidelines ‘Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities’ (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

All fuel storage areas will be bunded in the site compound and will be clearly marked. The bund will be at least 50m away from open waterbodies. A designated impermeable refuelling area will also be established with all plant brought to this point for filling. Spill kits will be kept in these areas in the event of spillages. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development Site. Only

emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

7.7.1.6 Emergency Procedures

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., accidental fuel spillages). Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed offsite. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff onsite will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the construction phase of the Proposed Development.

7.7.1.7 Infrastructure

All below ground foul drainage infrastructure will be constructed in accordance with current UE requirements to ensure that there are no potential effects to groundwater quality.

7.7.1.8 Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by an appropriately authorised contractor.

Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by UE.

7.7.1.9 Removal of Surplus Materials and Waste

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) and will be managed in accordance with all statutory obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27).

Any surplus material not suitable for re-use as a by-product and other waste materials arising from the construction phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

7.7.2 Operational Phase

Based on the design of the Proposed Development there are limited potential sources of contamination during the operational phase.

Surface water will be managed in accordance with the principles and objectives of SuDS and the GDSDS to treat and attenuate water prior to discharging offsite. Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be incorporated into the overall management strategy for the Proposed Development. This will ensure that there are no effects on water quality and quantity (flow regime) during the operational phase of the Proposed Development.

Standard design and construction measures will be implemented to mitigate potential impacts associated with shallow groundwater. These include the incorporation of groundwater drainage systems around impermeable subsurface structures, such as building foundations, attenuation tanks, and temporary construction barriers. These measures will minimise the risk of groundwater mounding on the upgradient side of structures and reduce the potential for buoyancy-related issues.

Where building foundations and utility infrastructure intersect the groundwater table, appropriate structural design and perimeter drainage will be employed to prevent groundwater ingress and maintain the integrity of below-ground assets.

Stream crossings have been designed in accordance with OPW requirements, with soffit levels at least 500mm above the 1% Annual Exceedance Probability (AEP) flood level. Two vehicular crossings meet road level constraints and have received OPW Section 50 consent.

To manage shallow groundwater and reduce surface-level flood risk, a network of land drains will be installed across the site. These drains are designed to intercept and convey groundwater, discharging to the Corbally Stream, Coldwater Stream, and Cooldown Stream. As documented in the HRA (DNV, 2025c), the proposed drainage system has been designed with sufficient capacity to accommodate the total estimated 26.07 m³/day of intercepted shallow groundwater. This confirms that the system is appropriately engineered to manage

anticipated volumes under steady-state conditions, while also contributing to flood risk reduction and the long-term viability of the translocated wetland habitat.

Foul water during the operational phase of the Proposed Development will ultimately discharge via the Ringsend WWTP to the Liffey Lower Estuary transitional waterbody. The Ringsend WWTP is operated in accordance with relevant statutory approvals issued by UE. Foul water from the site will only be discharged to the UE network under the appropriate consents from UE, and therefore, the Proposed Development will not cause a potential effect at any Natura 2000 sites associated with discharges from the site.

There is no other requirement for mitigation measures for the operational phase of the Proposed Development.

7.7.3 "Worst Case" Scenario

During the construction phase and operational phase of the Proposed Development, in a worst-case scenario, such as a fuel spill or accidental unmitigated release of other hazardous compounds occurring, and in the absence of any mitigation measures it is considered that there would be a potential 'negative', 'moderate to significant' and 'long term' impact on the quality of the receiving waterbody and downstream receptors, depending on the nature of the incident. In the absence of any mitigation measures and worst-case scenario, it is considered that there would be a potential 'negative', 'moderate' to 'significant' and 'long-term' effect on the quality of a localised area of the aquifer and on the receiving waterbodies including the Corbally, Coldwater, and Cooldown Streams and locally within the downstream Camac River.

In a worst-case scenario, there is a potential risk of accidental release of untreated water via failure or rupture of the drainage system with potential effects on the receiving water environment. It is considered that the potential risk of the release of untreated water will present a 'negative', 'moderate' and 'long-term' effect on the receiving environment.

However, these worst-case scenarios are deemed to be unlikely scenarios taking account of the embedded design avoidance measures and mitigation measures and therefore, there would be a 'neutral', 'imperceptible' and 'short-term' effect on the receiving environment.

7.8 Water Framework Directive

The EU Water Framework Directive (2000/60/EC), as amended by Directives 2008/105/EC, 2013/39/EU, and 2014/101/EU ("WFD"), was established to ensure the protection and enhancement of the water environment across all EU member states. In Ireland, the WFD has been transposed through the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003).

The WFD requires that all member states protect and improve water quality in all waters, with the objective of achieving at least 'good' status by 2027. It applies to all surface waters (including rivers, lakes, reservoirs, streams, and canals), groundwater, transitional (estuarine), and coastal waters. Any new development must ensure that this objective is not compromised.

A risk-based HRA was undertaken by DNV (DNV, 2025c) to evaluate the potential effect of the Proposed Development on water quality within the surrounding hydrological environment. This assessment considered both the baseline conditions and the relevant legislative framework, including the WFD and associated national regulations

7.8.1 Waterbody Status

The risk-based assessment focused on the following waterbodies that have a potential hydraulic connection to the site:

- Kilcullen GWB.
- Dublin GWB.
- Camac_020 (i.e., the Corbally Stream, Coldwater Stream, Cooldown Stream).
- Camac_030.

Given the distance downstream, and the significant dilution and taking account of the existing baseline conditions and WFD Status it is considered that there will be no significant adverse effects on the Camac_040 and downstream transitional and coastal waterbodies, including the Liffey Estuary Upper, Liffey Estuary Lower, and Dublin Bay and other tidally linked transitional and coastal waterbodies.

7.8.2 Assessment

The findings of the risk-based assessment (DNV, 2025c) identified that in the absence of any mitigation and avoidance measures there could be a potential impact on the water quality within receiving water bodies associated with the Proposed development, specifically within the Kilcullen GWB, the Dublin GWB, the Camac_020 (i.e., the Corbally Stream, Coldwater Stream, Cooldown Stream) and locally within the Camac_030. The potential effect on WFD status for water bodies was assessed based on the worst-case scenario, taking account of the baseline hydrological and hydrogeological conditions at the subject site and the WFD status assigned by the EPA (EPA, 2025).

To address potential risks, the Proposed Development incorporates design avoidance and mitigation measures as outlined in this chapter of the EIAR, including the implementation of a project specific CEMP during the construction phase and the incorporation of SuDS in the design of the Proposed Development. These measures will serve to mitigate any potential effect on the receiving groundwater and surface water environment. Hence, the Proposed Development will not have any effect on compliance with the EU Water Framework Directive.

Further details of the assessment are included in the HRA (DNV, 2025c) included in Volume 3 Appendix 6.1 of the EIAR.

7.8.3 Conclusion

Taking into account the embedded design and mitigation measures, the Proposed Development:

- Will not result in deterioration of the status of hydrologically and hydrogeologically connected waterbodies.
- Will not compromise the objective of achieving ‘good’ surface water status or good ecological potential.
- Will remain compliant with the WFD and relevant national legislation.

There will be no adverse effect on the existing WFD status of hydrologically and hydrogeologically connected waterbodies associated with the Proposed Development including the Kilcullen GWB, the Dublin GWB, the Camac_020 (i.e., the Corbally Stream,

Coldwater Stream, Cooldown Stream) and Camac_030 taking account of embedded design avoidance and mitigation measures (DNV, 2025c).

Overall, there will be a 'neutral to positive', 'slight' and 'long-term' effect on the WFD Status. This effect is considered non-significant in the context of the EIA Directive.

7.9 Residual Impacts

Residual impacts are defined as 'effects that are predicted to remain after all assessments and mitigation measures'. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted effects of the construction and operational phases of the Proposed Development are described in Table 7-11 in terms of quality, significance, extent, likelihood, and duration. The relevant mitigation measures are detailed, and the residual effects are determined which take account of the avoidance, remedial and mitigation measures.

Overall, considering the avoidance, remedial and mitigation measures detailed in Section 7.7, the residual effects regarding the construction and operational phases of the Proposed Development are considered 'imperceptible' to the receiving water environment (hydrology and hydrogeology) and considered non-significant in the context of the EIA Directive.

There will be no effect to the existing WFD Status of water bodies associated with the Proposed Development including the Kilcullen GWB, the Dublin GWB, the Camac_020 (i.e., the Corbally Stream, Coldwater Stream, Cooldown Stream) and Camac taking account of design avoidance and mitigation measures where required.

Table 7-11. Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
Construction Phase										
Dewatering Works	Hydrogeological Flow Regime	There may be a requirement for localised dewatering or sump pumping on a temporary basis during excavation works. However, it is considered that the extent of any impact will be localised to the immediate area surrounding the excavations.	Negative	Slight (non-significant)	Local	Likely	Temporary	Direct	Water pumped from excavations will be managed in accordance with best practice standards (i.e., CIRIA C750), the CEMP and regulatory consents.	Imperceptible (non-significant)
Construction of the proposed overflow to the translocated marshland area	Hydrological Flow Regime	Impacts on flow within Coldwater Stream during the construction the proposed overflow.	Neutral	Slight to Moderate	Local	Likely	Temporary	Direct	Construction of the overflow will ensure minimum disruption to flow regime of the Coldwater Stream and continuous flow will be maintained.	Imperceptible (non-significant)
Introduction of Contaminants	Groundwater Quality and WFD status	During excavation, there is a risk to the	Negative	Significant (significant)	Local	Unlikely	Long-term	Direct / Worst Case	Emergency procedures will be developed by the	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
to Open Excavations		underlying bedrock aquifer due to any accidental release of fuels or other contaminates to exposed granular subsoils or bedrock creating a direct pathway to the bedrock aquifer.							appointed contractor in advance of works commencing. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.	
Introduction of Contaminants to Open Excavations	Receiving Surface Water Quality and WFD status	In an un-mitigated scenario following any accidental release of fuels or other contaminates to ground, there is an indirect risk via lateral migration in groundwater or overland flow to receiving surface waterbodies (i.e., Corbally, Coldwater, and Cooldown Streams) and	Negative	Moderate to Significant (significant)	Regional	Unlikely	Long-term	Indirect / Worst Case	Emergency procedures will be developed by the appointed contractor in advance of works commencing. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		locally within the downstream Camac River.								
Discharge of Water (Groundwater / Surface Water Runoff) to Sewer, Watercourses or Groundwater	Groundwater and Receiving Surface Water Quality and WFD status	Water will be discharged by the contractor, following appropriate treatment (e.g., settlement or hydrocarbon interceptor), to sewer, watercourses or groundwater in accordance with the necessary discharge licences issued by UE or WCC.	Neutral	Imperceptible (non-significant)	Local	Possible	Temporary	Direct	There will be no unauthorised discharge of water (groundwater / surface water runoff) to sewer, watercourses or groundwater	Imperceptible (non-significant)
Instream and Near Stream Works	Receiving Surface Water Quality and WFD status	There is the potential for some disturbance of the stream bed and increased suspended solids content of the water downstream of the works area during the	Negative	Moderate (non-significant)	Regional	Possible	Short-term	Direct	All instream works or works carried out in or adjacent to open waterbodies will adhere to the IFI Guidelines (IFI, 2016), (TII) Guidelines (TII, 2008), CIRIA C648	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		construction of the proposed headwalls, overflow to the Translocated Marshland Area and bridge crossings.							and the requirements of the CEMP.	
Discharge of Entrained Sediment or Other Contaminants in Surface Runoff (Overland Flow)	Receiving Surface Water Quality and WFD status	There is a potential for release of suspended sediments entrained in surface runoff from groundworks or indirectly tracked on vehicles / machinery entering the receiving Corbally, Coldwater, and Cooldown Streams.	Negative	Slight to Moderate (non-significant)	Local	Possible	Short Term	Direct	Implementation of appropriate procedures in accordance with the CEMP, including silt fences and buffer zones will be implemented to prevent fugitive runoff.	Imperceptible (non-significant)
Piling	Groundwater Quality and WFD status	Piling during the construction phase of the Proposed	Negative	Moderate to Significant (significant)	Local	Possible	Medium Term	Direct	Implementation of appropriate procedures in accordance with	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		Development may potentially create pathways for contaminants such as grout or other materials to enter underlying groundwater							the CEMP including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation.	
Removal of Surplus Materials and Waste	Groundwater Quality and WFD status at the destination site.	In the unlikely event that surplus soil or other waste materials are directed to an unauthorised location there is potential to impact on the receiving hydrogeology at that location	Negative	Slight to Moderate (non-significant)	Regional	Unlikely	Medium Term	Indirect	All surplus materials and waste that will require removal offsite will be managed in accordance with all statutory obligations.	Imperceptible (non-significant)
Introduction of Cementitious Materials to Groundwater	Groundwater Quality and WFD status	Potential release of cementitious material during construction works for foundations, pavements and infrastructure.	Negative	Moderate to Significant (significant)	Local	Unlikely	Medium Term	Direct / Worst Case	Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving water environment through the use of appropriate design	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
									and methods implemented by the appointed Contractor and in accordance with the CEMP and relevant industry standards.	
Waste Water Generated Onsite	Receiving Surface Water Quality and WFD status	Foul water generated from welfare facilities onsite will be either tankered offsite in accordance with waste management legislation or discharged under temporary consent to the UE mains foul network for treatment at Ringsend WWTP.	Neutral	Imperceptible	Regional	Unlikely	Temporary	Indirect	All waste from welfare facilities will be managed in accordance with the relevant statutory obligations.	Imperceptible (non-significant)
Operational Phase										
Construction of the	Hydrogeological Regime	The Proposed Development will result in an	Negative	Imperceptible (non-significant)	Local	Likely	Permanent	Direct	None required. The proposed SuDS combined	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
Proposed Development		increase of hardstanding on the site resulting in a potential impact on the on the hydrogeological flow regime within a very localised zone of the aquifer.							with the limited recharge potential across the site means that there will be little to no change to the overall recharge potential to the aquifer.	
Below Ground Infrastructure	Hydrogeological Regime	The proposed building foundations and attenuation tank have the potential to impede local groundwater flow and movement through the site with potential for groundwater mounding upgradient of structures	Negative	Imperceptible (non-significant)	Local	Likely	Permanent	Direct	Standard design and construction measures that include incorporating groundwater drainage around impermeable subsurface structures will minimise adverse effects of groundwater mounding at the upgradient side of the structures and potential buoyancy issues.	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
Overflow to Translocated Marshland	Hydrological Flow Regime	The sustained supply of water to the translocated marshland will allow for continued hydraulic connection (via overland flow and infiltration) with the Corbally Stream.	Neutral	Imperceptible (non-significant)	Local	Likely	Permanent	Direct	None required. Water will continue to discharge to the Corbally Stream via overland flow and/or groundwater discharge.	Imperceptible (non-significant)
Management of Surface Water Runoff	Receiving Surface Water Quality and WFD status	Surface water runoff from the Proposed Development will discharge to the receiving Corbally, Coldwater, and Cooldown Streams.	Positive	Slight (non-significant)	Local	Likely	Permanent	Direct / Cumulative	Surface runoff from roofs and paved areas will be managed and treated in accordance with SUDS and pass through petrol interceptor and attenuation tanks prior to discharging to local surface water drainage network.	Imperceptible (non-significant)
Foul Water	Receiving Surface Water Quality and WFD status	Foul water from the Proposed Development will discharge via the	Neutral	Imperceptible (non-significant)	Regional	Likely	Permanent	Direct / Cumulative	The UE CoF letter states that the wastewater connection is	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
		Ringsend WWTP to the Liffey Estuary Lower transitional waterbody.							feasible subject to upgrades which will be funded by the Applicant. The Applicant will ensure that any connection will be under the consent of UE and subject to a connection offer.	
Flooding	Hydrological Regime	The SSFRA (Kilgallen & Partners Consulting Engineers, 2025) identifies that that the Proposed Development is deemed appropriate from a flood risk perspective, with no increased risk to surrounding areas.	Neutral	Imperceptible (non-significant)	Local	Likely	Long Term	Direct / Cumulative	None required. Surface water drainage at the Proposed Development has been designed in accordance with SuDS and satisfies the requirements of the GDSDS. Furthermore, the proposed drainage system has been designed with sufficient capacity to accommodate intercepted shallow groundwater.	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
Below Ground Infrastructure	Subsurface Structures	The interception of shallow groundwater may increase hydrostatic pressure which can reduce the void space of below ground infrastructure, and result in buoyancy and structural integrity risks for subsurface structures.	Neutral	Imperceptible (non-significant)	Local	Possible	Permanent	Direct	The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which will include measures to counter buoyancy of tanks and subsurface structures.	Imperceptible (non-significant)
Water Supply	Water Supply Network and Water Resources	Mains supply from UE will be provided for the Proposed Development.	Neutral	Imperceptible (non-significant)	Regional	Likely	Long Term	Direct / Cumulative	The UE CoF letter states that the water supply connection is feasible without infrastructure upgrade from UE. The Applicant will ensure that any connection will be under the consent of UE and subject to a connection offer. The mains water supply will	Imperceptible (non-significant)

Activity	Attribute	Predicted Impact	Quality	Significance (Significance in the Context of EIA Directive)	Extent	Probability	Duration	Type	Mitigation	Residual Impact (Significance in the Context of EIA Directive)
									be operated in accordance with relevant existing statutory consents.	

7.10 Monitoring

7.10.1 Construction Phase

During the construction phase of the Proposed Development, the following monitoring measures will be considered:

- An ECoW and EnCoW will be appointed to ensure best practices are carried out during critical stages of the construction works associated with surface water in particular works for the overflow to the translocated marshland area, construction of the proposed headwalls and bridge crossings.
- The ECoW will be present on-site during works for the construction of the overflow to the Translocated Marshland Area.
- The EnCoW will undertake visual inspection and monitoring (pH, electrical conductivity, turbidity, suspended solids and hydrocarbons) prior to, during and post overflow, headwall and bridge crossing construction works to ensure minimum disturbance of water quality in the receiving environment.
- The programme of water quality monitoring and locations of sampling will be agreed with SDCC in advance of construction works commencing. However it is anticipated that monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction and during works as follows:
    - Twice weekly visits during general site works
    - Daily site visits during key construction activities (to be agreed between the environmental specialist, the appointed contractor and SDCC (e.g., during the construction of the translocated wetland, during installation of the proposed outfalls and stream crossings, during and immediately after clearance of on-site vegetation)).
    - Event inspection (e.g., following heavy rainfall events or during concrete pours).
- All monitoring data will be collated by the EnCoW to show trends for indicator parameters pH, conductivity, turbidity or suspended solids and hydrocarbons, and will be shared with SDCC as requested. Where a deterioration in water quality is observed downstream of the site this will be brought to the attention of the contractor by the Environmental / Ecological Clerk of Works, and any suitable contingency measures will be instigated.
- Inspection records and summary reports from site supervision by the ECoW and EnCoW will be made available to SDCC upon request.
- Inspections will be undertaken by the contractor's appointed Environmental Manager or delegate during excavations and other groundworks to ensure that measures are protective of water quality outlined in this EIAR are fully implemented and effective and are in compliance with the CEMP (DNV, 2025a) and that the requirements of the Conditions of Planning, the NIS and associated documentation are being adhered to during construction.
- All surface water control measures including silt traps, silt fences and settlement ponds will be checked regularly and maintained by the Environmental Manager or delegate as necessary, in order to ensure continued effectiveness throughout the construction phase.
- Only suitably trained staff will undertake environmental site inspections.

- Discharges of groundwater and/or water pumped from excavations to surface water or foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge license). This may include sampling and laboratory analysis of treated water prior to discharge.
- Routine monitoring and inspections will be undertaken during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures

7.10.2 Operational Phase

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the Proposed Development.

7.11 Interactions

7.11.1 Population and Human Health

An assessment of the potential effect of the Proposed Development on human health is included in Chapter 4 of this EIAR.

No public health issues associated with the water (hydrology and hydrogeology) conditions at the site have been identified for the construction phase or operational phase of the Proposed Development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers.

7.11.2 Biodiversity

An assessment of the potential impacts of the Proposed Development on the biodiversity of the site, with emphasis on habitats, flora and fauna which may be impacted, as is included in Chapter 5 of this EIAR, such as potential pollution of waterbodies impacting on flora and fauna in the absence of mitigation measures.

Chapter 5 of this EIAR addresses impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

7.11.3 Land, Soil and Geology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the construction phase and operational of the Proposed Development is set out in Chapter 6 of this EIAR. In the absence of avoidance and mitigation measures, there is a potential for sediments from excavated soils entering the drainage network and tracking downstream during the construction phase.

7.11.4 Material Assets – Waste and Utilities

An assessment of the potential impact of the Proposed Development on the material assets including built services and infrastructure has been set out in Chapter 13 of this EIAR.

During the construction phase of the Proposed Development, discharges of water to the public foul sewer will be in accordance with the necessary discharge licence issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations.

During the operation phase of the Proposed Development, any discharges to the public foul sewer and supplementary water supply to the Proposed Development will be under consent from UE.

7.12 Difficulties Encountered When Compiling

There were no difficulties encountered in the preparation of this chapter of the EIAR

7.13 Conclusion

Overall, taking into account the avoidance, remedial, and mitigation measures outlined in Section 7.7, the residual effects associated with both the construction and operational phases of the Proposed Development are considered imperceptible in terms of their impact on the receiving environment (hydrogeology). These effects are deemed non-significant within the context of the EIA Directive. Furthermore, no hydrological and hydrogeological-related constraints have been identified that would be expected to hinder or prevent the Proposed Development from proceeding as planned.

There will be no effect to water quality and the existing WFD Status of water bodies associated with the Proposed Development including the Kilcullen GWB, the Dublin GWB, the Camac_020 (i.e., the Corbally Stream, Coldwater Stream, Cooldown Stream) and Camac_030 taking account of embedded design avoidance and mitigation measures where required.

7.14 References

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8 AIR QUALITY

8.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) assesses the impact on air quality associated with the construction and operational phases of a Large-scale Residential Development (LRD) at a site located at Boherboy, Saggart, County Dublin (hereafter referred to as the Proposed Development).

In terms of potential air quality impacts, the Proposed Development has the potential to give rise to construction dust impact during the construction stage. During the operation of the Proposed Development, there is the potential for air quality impact due to associated road traffic movements and space heating emissions.

The assessment has been carried out according to best practice standards and guidelines relating to air quality and is based on a reasonable worst-case scenario with respect to potential air quality effects arising from the construction or operation of the Proposed Development.

8.1.1 Quality Assurance and Competency of Experts

This Air Quality Impact Assessment has been prepared by Olivia Maguire, a senior consultant with AONA Environmental Consulting Ltd. Olivia's areas of professional expertise are in air quality and odour impact assessment and mitigation design as well as Health and Safety consultancy. Olivia is a Member of Institute of Environmental Management and Assessment (IEMA) and a Member of Occupational Hygiene Society of Ireland with a B.Sc. Occupational Safety and Health, M.Sc. Environmental Science, B.Sc. (Hons) Geography, and is a qualified ISO 14001: Lead Environmental Auditor. Olivia has in excess of 20 years of professional expertise in environmental consultancy.

This Air Quality Impact Assessment has been reviewed by Mervyn Keegan of AONA Environmental Consulting Ltd. Mervyn Keegan is a Director of the environmental consultancy, AONA Environmental Consulting Ltd. Mervyn Keegan's areas of professional expertise are in noise control and acoustics and air quality and odour consultancy, including impact assessment and mitigation design. Mervyn Keegan has in excess of 25 years of environmental consultancy experience. Mervyn is a member of the Institute of Acoustics, a member of the Institute of Environmental Sciences and a member of the Institute of Air Quality Management with a Bachelor of Science Degree (Applied Sciences), a Master of Science Degree (Environmental Science) and a Diploma in Acoustics in Noise Control. AONA Environmental Consulting Ltd. is an independent consultancy specialising in Environmental Impact Assessment and Licensing. Mervyn Keegan has prepared in excess of fifty noise and vibration and air quality and Climate impact assessments annually for infrastructure, transport, industry, commercial and quarry developments in the Republic of Ireland, Northern Ireland and the UK in the last 20 years and is an expert in the awareness and understanding of the relevant legislation and guidance that pertains to best practice in such assessments. Mervyn Keegan has appeared as an Expert Witness at oral hearings, public inquiries and legal hearings.

8.2 Study Methodology

The approach to the air quality impact assessment has been as follows;

- A review of available published ambient air monitoring data relevant to the wider area in proximity to the Proposed Development has been undertaken;
- A review of the most applicable standards and guidelines has been reviewed in order to define the air quality significance criteria for the Construction and Operational Phases of the Proposed Development;
- An assessment of the likely Construction Phase air quality impacts has been undertaken at the nearest sensitive locations to the proposed construction work areas associated with the Proposed Development;
- An assessment of the likely Operation Phase air quality impacts associated with any altered traffic flows due to the Proposed Development for the future residents of the Proposed Development and at the most sensitive nearest locations; and
- A recommendation of appropriate mitigation measures has been outlined where required, to reduce Construction Phase and / or Operation Phase air quality impacts, where any identified potential air quality impacts associated with the Proposed Development.

8.2.1 Relevant Guidelines, Policy and Legislation

8.2.1.1 Legislation

Specific legislation relating to air quality which has been considered within this chapter of the EIAR includes:

- Air quality Standards Regulations 2011 (S.I. No. 180 of 2011) as amended;
- Ambient Air quality Standards Regulations 2022 (S.I. No. 739 of 2022);
- EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU);
- Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008 on ambient air quality and cleaner air for Europe;
- Directive 2024/2881 of the European Parliament and of the Council of 23rd October 2024 on ambient air quality and cleaner air for Europe (recast);
- World Health Organisation (WHO) global air quality guidelines: particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide Update 2021 (WHO Air quality Guidelines, WHO 2021).

8.2.1.2 Ambient Air Quality Standards

The Ambient Air quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) was transposed into Irish legislation by the Air quality Standards Regulations 2011 (S.I. No. 180 of 2011). The Directive (2004/107/EC) was transposed into Irish legislation by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009).

The European Union (EU) air quality standards and objectives set out in the ambient air quality directives 2008/50/EC and 2004/107/EC[1] have been revised in the Directive 2024/2881 of the European Parliament and of the Council of 23rd October 2024 on ambient air quality and cleaner air for Europe (recast).

The revised EU Ambient Air quality Directive, which entered into force on 10th December 2024, tightens restrictions on a number of key air pollutants which have been demonstrated to be harmful to human health. Directive 2024/2881 brings the limit on harmful pollutants closer to those recommended by the World Health Organisation (2021). This directive has to be implemented in national regulation on 11th December 2026, at the latest and member states must meet the new air quality standards by 2030.

The EU Commission will adopt secondary legislation (implementing acts) to complement the new rules and assist with their application. In the interim period, before 2030, the 2008 limit and target values will continue to apply and Member States are permitted to introduce more stringent requirements.

The revised EU Ambient Air Quality Directive updates air quality standards, lowering the allowable levels for twelve air pollutants: particulate matter ($PM_{2.5}$ and PM_{10}), nitrogen dioxide (NO_2), nitrogen oxides (NOx), sulphur dioxide (SO_2), ozone (O_3), carbon monoxide, benzene, benzo(a)pyrene, arsenic, cadmium, nickel and lead. Error! Reference source not found. sets out the relevant limit values specified by the Air quality Regulations.

The Environmental Protection Agency (EPA) is the competent authority for the purpose of Directive 2008/50/EC and the revised Directive 2024/2881 and corresponding Regulations. These Regulations also provide for the dissemination of public information, including information on any exceedances of the target values, the reasons for the exceedances, the area(s) in which they occurred and appropriate information regarding effects on health and impact on the environment. Table 8-8-1 sets out the relevant limit values specified by the Air Quality Regulations.

Table 8-8-1: EU Air Quality Standards

Pollutant	Limit Value Objective	Average Period	Air quality Limit Values	
			Current EU 2008 Limit Values (µg/m^3)	EU 2024 Limit Values((Limit values for the protection of human health to be obtained by 1st January 2030) (µg/m^3)
NO_2	Protection of human health	Annual mean	40 µg/m^3	20 µg/m^3
		Daily Mean	-	50 µg/m^3 (not to be exceeded >18 times per calendar year)
		1 hour	200 µg/m^3 (not to be exceeded >18 times per calendar year)	200 µg/m^3 (not to be exceeded >3 times per calendar year)

[1] https://environment.ec.europa.eu/topics/air/air-quality_en - law

Pollutant	Limit Value Objective	Average Period	Air quality Limit Values	
			Current EU 2008 Limit Values ($\mu g/m^3$)	EU 2024 Limit Values((Limit values for the protection of human health to be obtained by 1st January 2030) ($\mu g/m^3$)
NOx	Protection of ecosystems	Annual mean	30 $\mu g/m^3$	30 $\mu g/m^3$
PM_{10}	Protection of human health	Annual Mean	40 $\mu g/m^3$	20 $\mu g/m^3$
		Daily Mean	-50 $\mu g/m^3$ (allowed to be exceeded 35 times per year	45 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
$PM_{2.5}$	Protection of human health	Annual Mean	20 $\mu g/m^3$	10 $\mu g/m^3$
		Daily Mean	-	25 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
SO_2	Protection of human health	Annual Mean	-	20 $\mu g/m^3$
		Daily Mean	125 $\mu g/m^3$ (not to be exceeded >3 times per calendar year)	50 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
		One Hour	350 $\mu g/m^3$ (not to be exceeded >24 times per calendar year)	350 $\mu g/m^3$ (not to be exceeded >3 times per calendar year)
	Protection of vegetation	Calendar year	20 $\mu g/m^3$	20 $\mu g/m^3$
	Protection of vegetation	1 Oct to 31 Mar	20 $\mu g/m^3$	20 $\mu g/m^3$
Lead	Protection of human health	Annual Mean	0.5 $\mu g/m^3$	0.5 $\mu g/m^3$
Carbon Monoxide	Protection of human health	8 hours	10 $\mu g/m^3$	10 $\mu g/m^3$
		Daily Mean	-	4 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)
Benzene	Protection of human health	Annual Mean	5 $\mu g/m^3$	3.4 $\mu g/m^3$
Ozone (O_3)	Protection of human health	Daily Mean	120 $\mu g/m^3$ (not to be exceeded >18 times per calendar year)	100 $\mu g/m^3$ (not to be exceeded >3 times per calendar year)
Arsenic (As)	Protection of human health	Annual Mean	6 ng/m^3	6 ng/m^3
Cadmium (Cd)	Protection of human health	Annual Mean	5 ng/m^3	5 ng/m^3

Pollutant	Limit Value Objective	Average Period	Air quality Limit Values	
			Current EU 2008 Limit Values (µg/m^3)	EU 2024 Limit Values((Limit values for the protection of human health to be obtained by 1st January 2030) (µg/m^3)
Nickel (Ni)	Protection of human health	Annual Mean	20 ng/m^3	20 ng/m^3
Polycyclic Aromatic Hydrocarbons	Protection of human health	Annual Mean	1 ng/m^3 (expressed as concentration of Benzo(a)pyrene)	1 ng/m^3 (expressed as concentration of Benzo(a)pyrene)

8.2.1.3 Policy

In May 2021, the European Commission (EC) adopted the EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' (EC, 2021), as a key deliverable of the European Green Deal (EC, 2019). The EU Action Plan sets out the zero pollution vision for 2050; *'a healthy planet for all'*, where air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment. To steer the EU towards the 2050 vision, the EU Action Plan sets out key 2030 targets to speed up pollution reduction. The targets for 2030 of this plan which are relevant to this assessment are listed as follows:

- Improving air quality to reduce the number of premature deaths caused by air pollution by 55%; and
- Reducing by 25% the EU ecosystems where air pollution threatens biodiversity.

The main objective of the EU Action Plan is to provide a compass for including pollution prevention in all relevant EU policies. Although the Action Plan states that the EU has a robust regulatory framework in place to cap ambient air pollution, the number of premature deaths and other diseases attributed to air pollution remains high. This can be attributed to the fact that some EU standards are still less stringent than the guidelines set by the World Health Organisation (WHO) in 2005 and the way the Ambient Air Quality Directives are implemented has only been partially effective.

The EU Action Plan sets out that the EU plans to adopt limits that are more closely in line with WHO guidance for air quality in 2022. This was scheduled for 2022 to allow for an anticipated WHO update to its air quality guidance. In September 2021 the World Health Organisation (WHO) updated their air quality guidelines based on the latest scientific evidence for the protection of human health and the environment (WHO, 2021). The guidelines are more stringent than the current Ambient Air Quality Standards. The guidelines are more stringent than the current Ambient Air quality Standards. WHO updates the Air quality Guidelines on a regular basis so as to ensure their continued relevance and to support a broad range of policy options for air-quality management in various parts of the world, especially taking into account the breadth of new health studies that have been published in the meantime. The 2021 update of the WHO Air quality Guidelines is in response to the real and continued threat of air pollution to public health. The WHO Air quality Guidelines recommend levels and interim targets for common air pollutants such as particulate matter ($PM_{2.5}$ and PM_{10}), O_3, NO_2, and SO_2. These are outlined in Table 8-8-2.

Table 8-8-2: Recommended 2021 WHO Air Quality Guidelines levels compared to 2005 WHO Air Quality Guidelines levels

Pollutant	Averaging Period	2005 AQGs (µg/m^3)	2021 AQGs (µg/m^3)
$PM_{2.5}$	Annual	10	5
	24 hours	25	15
PM_{10}	Annual	20	15
	24 hours	50	45
SO_2	24 hours	20	40
NO_2	Annual	40	10
	24 hours	-	25
O_3	Peak Season	-	60
	8 hours	100	100
CO (mg/m^3)	24 hours	-	4

8.2.1.4 Guidelines

The air quality impact assessment has been undertaken with reference to the most relevant and current guidance documents relating to this Chapter of the EIAR as follows:

- Institute of Air Quality Management (IAQM) – Land-Use Planning & Development Control: Planning For Air Quality (January 2017)
- Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction (IAQM) January 2024 (Version 2.2)
- DMRB Sustainability & Environment. Appraisal *LA 105 Air quality*. DMRB LA105 Air quality (formerly HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15), (Highways Agency, 2020); and
- Department for Environment, Food and Rural Affairs (DEFRA) Air Quality Management Technical Guidance LAQM.TG (22) (August 2022).
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022);

- Transport Infrastructure Ireland, Air Quality Assessment of Specified Infrastructure Projects Overarching Technical Guidance, PE-ENV-01106 (Dec. 2022).
- Institute of Air Quality Management, A guide to the assessment of air quality impacts on designated nature conservation sites (2020)

8.2.1.4.1 Construction Dust Assessment Guidelines

Currently no Irish statutory standards or limits exist for the assessment of dust deposition and its tendency for causing nuisance. Similarly, no official air quality criterion has been set at a European or WHO level, although a range of national 'yardstick' criteria from other countries is found in literature.

The German TA Luft Regulations, "Technical Instructions on Air quality Control" (Verein Deutscher Ingenieure (VDI) 2002) state that total dust deposition (soluble and insoluble, measured using Bergerhoff type dust deposit gauges as per German Standard Method for determination of dust deposition rate, VDI 2119) should not exceed a dust deposition rate of 350 mg/m^2/day (when averaged over a 30+/-2 day period). The use of this limit value is appropriate to minimise the impact of airborne dust levels on the receiving environment beyond the Proposed Development site boundary. The German TA Luft criteria for '*possible nuisance'* and *'very likely nuisance'* are 350 mg/m^2/day and 650 mg/m^2/day, respectively.

In 2005, the UK Highways Agency (Now National Highways) released an Interim Advice Note 61/05 Guidance for Undertaking Environmental Assessment of Air quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSIs (UK Highways Agency 2005) as a supplement to the Design Manual for Roads and Bridges (DMRB) Guidelines. This states that dust or particles falling onto plants can physically smother the leaves affecting photosynthesis, respiration and transpiration. The literature suggests that the most sensitive species appear to be affected by dust deposition at levels above 1,000 mg/m^2/day which is considerably greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. As such, once dust deposition rates are maintained within the guidelines for human nuisance the impact of dust deposition on sensitive ecosystems is considered negligible.

Interim Advice Note (IAN) 175/13 prepared as a supplement to the Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 of the Design Manual for Roads and Bridges also known as HA207/07) suggests that dust deposition levels above 1,000 mg/m^2/day are likely to affect sensitive ecological receptors. Annex F, Assessment of Designated Sites states "F1.5 Deposition of particles, ammonia, metals and salt will also be increased close to the road. This could affect vegetation in a number of ways: i) Dust or particles falling onto plants can physically smother the leaves affecting photosynthesis, respiration and transpiration. The literature suggests that the most sensitive species appear to be affected by dust deposition at levels above 1000 mg/m^2/day which is five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans. Most species appear to be unaffected until dust deposition rates are at levels considerably higher than this." The UK Highways Agency guideline (2005) has since been updated several times. The 2005 version has not been used for 16 years. The latest guidance for 2019 no longer presents limit values for dust deposition. IAN 175/13 has been superseded by newer guidance, *DMRB LA105 Air quality*. While LA 105 is the current UK standard, the principle of using thresholds for dust

impacts, as described in the superseded document, is still relevant for evaluating potential nuisance and health effects during construction and in the operation of highway schemes. While the EPA doesn't set its own official dust deposition guidelines in Ireland, it does recommend adopting the German TA Luft standard, which suggests a limit of 350 mg/m²/day for total deposited dust to prevent soiling. The EPA have published useful guidance titled Quarries & Ancillary Activities – Guidelines for Planning Authorities (DoEHLG, 2004). In these guidelines the EPA recommend that the TA Luft dust deposition limit value be adopted at site boundaries associated with quarry developments. In the absence of an alternative, it is the only enforceable method available. Where this method is deemed unsuitable for use, and only in these circumstances, an alternative method may be agreed with the local authority. The same principles and recommendations apply to other extractive industries, such as those related to road-building, as the aim is to prevent nuisance from deposited dust.

Therefore, the following dust deposition limits are typically recommended;

- Dust Deposition Rate limit = 350 mg/m^2/day (averaged over a 30+/-2 day period using Bergerhoff Gauge Method).
- Dust Deposition Rate limit affecting sensitive ecological receivers = 1,000 mg/m^2/day
- PM_{10} 24 Hour Mean concentration limit = 50 µg/m^3 not to be exceeded more than 35 times a calendar year
- PM_{10} Annual Mean concentration limit = 40 µg/m^3
- $PM_{2.5}$ Annual Mean concentration limit = 25 µg/m^3

8.2.2 Study Area

For the Construction Phase, the air quality impact assessment focuses on air quality sensitive receptors adjacent to the areas of proposed works, e.g. demolition, excavation, construction and haul road activities. For the Construction Phase, the extent of the overall study area is typically up to a maximum of 250 metres (m) from a specific area of construction work, as per the relevant IAQM Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024). In addition, as per the IAQM Guidance (Box 1, IAQM, 2024), the potential for construction phase dust impacts has also focussed on ecologically designated or sensitive sites within a Study Area of 50m from the Proposed Development boundary and/or 50 m of the route(s) used by construction vehicles on the public highway, and up to 250 m from the site entrance.

For the Construction Phase and Operation Phase traffic assessment, the focus is on air quality receptors within an overall Study Area of 200m from the Proposed Development boundary, as per DMRB Guidance and TII Guidance Air quality Assessment of Specified Infrastructure Projects - Overarching Technical Document (TII PE-ENV-01106, Dec 2022). For the Construction Phase there is potential for traffic emissions to impact air quality in the short term over the construction phase, particularly due to increase in Heavy Goods Vehicles (HGVs) accessing the site. For the Operation Phase traffic assessment, the air quality assessment has focused on the change in distribution of road vehicles and the likely effects of these changes on local air quality which is predicted to occur in the Study Area due to altered traffic flows on account of the operation of the Proposed Development.

The IAQM Guidance classifies sensitive air quality receptors based on their sensitivity to impacts like dust soiling, health effects, and ecological damage, using a three-tiered system of high, medium or low sensitivity. This classification considers the receptor's location, type (e.g., residential, industrial), proximity to potential sources, and the magnitude of the impact.

8.2.3 Appraisal Method for Assessment of Effects

The air quality impact of the Proposed Development has been assessed for each of the two distinct phases of the Proposed Development:

- Construction Phase; and
- Operational Phase

The methods used to assess the air quality impacts during the construction and operational phases are discussed in the following sections.

8.2.3.1 Construction Phase

8.2.3.1.1 Construction Dust Impact Assessment

A Construction Dust Impact Assessment has been carried out to assess the risk to sensitive receptors as a result of dust soiling, health impacts and ecology impacts during the Construction Phase in accordance with the IAQM's Guidance on the Assessment of Dust from Demolition and Construction (IAQM 2024). This IAQM Guidance is recommended for use in PE-ENV-01106. This appraisal reviews the sensitivity of the Proposed Development location with respect to dust nuisance, human health and ecological impacts and then calculates a risk of impact using the magnitude of site activities. The IAQM's Guidance outlines a step-wise process as follows;

- Step 1: Screening the Need for a Detailed Assessment;
- Step 2: Assess the Risk of Dust Impacts, including;
  - Step 2A: Define the Potential Dust Emission Magnitude,
  - Step 2B: Define the Sensitivity of the Area,
  - Step 2C: Define the Risk of Impacts,
- Step 3: Site-Specific Mitigation; and
- Step 4: Determine Significant Effects.

8.2.3.1.1.1 Step 1: Screening the Need for a Detailed Assessment

A Construction Dust Impact Assessment will be required where there is:

- a 'human receptor' within:
  - 250 m of the Proposed Development site boundary; and/or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s)
- an 'ecological receptor' within:

- 50 m of the Proposed Development site boundary; and/or
- 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

8.2.3.1.1.2 Step 2: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large (Step 2A); and
- the sensitivity of the area to dust impacts (Step 2B), which is defined as low, medium or high sensitivity.

These two factors are combined in Step 2C to determine the risk of dust impacts with no mitigation applied. The risk of dust impacts (Step 2C) are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk

Based on the threshold criteria and professional judgement one or more of the groups of activities may be assigned a 'negligible' risk. Such cases could arise, for example, because the scale is very small and there are no receptors near to the activity.

Step 2A: Define the Potential Dust Emission Magnitude

Demolition, earthworks, construction and trackout will occur during the construction phase. The dust emission magnitude is based on the scale of the anticipated works and should be classified as Small, Medium, or Large. Table 8-8-3 outlines example criteria as per the IAQM guidance for each construction activity. It should be noted that, in each case, not all the criteria listed need to be met, and that other criteria may be used if justified in the assessment.

Table 8-8-3: Criteria used in the Determination of Dust Emission Class

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Demolition	▪ Total building volume <12,000 m^3 ▪ Construction material with low potential for dust release (e.g. meta cladding or timber ▪ Demolition activities <6m above ground level ▪ Demolition during wetter months	▪ Total building volume 12,000 m^3 - 75,000m^3 ▪ Potentially dusty construction material. ▪ Demolition activities 6-12m above ground level	▪ Total building volume >75,000m^3 ▪ Potentially dusty construction material (e.g. concrete) ▪ On-site crushing and screening, ▪ Demolition activities >12m above ground level

Activity	Criteria used to Determine Dust Emission Class		
	Small	Medium	Large
Earthworks	▪ Total site area <18,000m^2 ▪ soil type with large grain size (e.g. sand), ▪ <5 heavy moving earth vehicles active at any one time ▪ Formation of bunds <3m in height	▪ Total site area 18,000 – 110,000m^2 ▪ Moderately dusty soil type (e.g. silt) ▪ 5-10 heavy moving earth moving vehicles active at any one time. ▪ Formation of bunds 3m - 6m in height,	▪ Total site area >110,000m^2 ▪ potentially dusty soil type (e.g. clay) ▪ >10 heavy earth moving vehicles active at any one time. ▪ Formation of bunds >6m in height
Construction	▪ Total building volume <12,000m^3 ▪ Construction material with low potential for dust release	▪ Total building volume 12,000 – 75,000m^3 ▪ Potentially dusty construction material (e.g. concrete) ▪ On-site concrete batching	▪ Total building volume >75,000m^3 ▪ On-site concrete batching ▪ Sandblasting
Trackout	▪ <20 outward HDV trips in any one day ▪ surface material with low potential for dust release, ▪ Unpaved road length <50m	▪ 20 - 50 outward HDV trips in any one day ▪ moderately dusty surface material (e.g. high clay content), ▪ Unpaved road length 50-100m	▪ >50 outward HDV trips in any one day ▪ potentially dusty surface material (e.g. high clay content ▪ Unpaved road length >100m

Step 2B: Define the Sensitivity of the Area

The IAQM guidance, Box 7 (IAQM 2024) outlines the criteria for determining the sensitivity of receptors.

- High sensitivity receptor with respect to dust nuisance – surrounding land where:

  Users can reasonably expect enjoyment of a high level of amenity;

  The appearance, aesthetics or value of their property would be diminished by soiling;

  The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land; and

  Examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.

- Medium sensitivity receptor with respect to dust nuisance – surrounding land where:

  Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;

  The appearance, aesthetics or value of their property could be diminished by soiling;

The people or property would not reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; and

Indicative examples include parks and places of work.

- Low sensitivity receptor with respect to dust nuisance – surrounding land where:

  The enjoyment of amenity would not reasonably be expected;

  Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling;

  There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land; and

  Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.

Receptor sensitivity can be described as follows with respect to human health as per the IAQM guidance (IAQM 2024):

- High sensitivity receptor with respect to human health – surrounding land where:

  Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and

  Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.

- Medium sensitivity receptor with respect to human health – surrounding land where:

  Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and

  Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.

- Low sensitivity receptor with respect to human health – surrounding land where:

  Locations where human exposure is transient; and

  Indicative examples include public footpaths, playing fields, parks and shopping streets.

Receptor sensitivity can be described as follows with respect to ecological effects as per the IAQM guidance (IAQM 2024):

- High sensitivity receptor with respect to ecological effects:

  Locations with an international or national designation and the designated features may be affected by dust soiling;

  Locations where there is a community of a particular dust sensitive species; such as Irelands Red List No.10 Vascular Plants; and

  Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings

- Medium sensitivity receptor with respect to ecological effects:

  Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown;

  Locations with a national designation where the features may be affected by dust deposition; and

  Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features

- Low sensitivity receptor with respect to ecological effects:

  Locations with a local designation where the features may be affected by dust deposition; and

  Indicative example is a local Nature Reserve with dust sensitive features.

The IAQM guidance (IAQM 2024) also outline the criteria for assessing the human health impact from PM_{10} emissions from construction activities based on the current annual mean PM_{10} concentration, receptor sensitivity as detailed above and the number of receptors affected. Where the number of receptors is not clear, i.e. for an apartment building, conservative sensitivities can be assumed. In addition, when calculating the sensitivity with respect to human health, the background concentrations of particulates was reviewed. The background air quality in the area of the Proposed Development is discussed in Section 8.3.

Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. 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.

The IAQM guidance, Box 7 (IAQM 2024) outlines the criteria for determining the sensitivity of receptors as detailed above. This is summarised in Table 8-8-4 for nuisance dust on people and property with respect to human health.

Step 2C: Define the Risk of Dust Impacts

These two factors are combined in Step 2C to determine the risk of dust impacts with no mitigation applied. The risk of dust impacts (Step 2C) are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk.

Table 8-8-4: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity	
	Dust Soiling Effects	Health Effects of PM_{10}
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM_{10}
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets

The criteria detailed in Table 8-8-5 ,Table 8-8-6 and Table 8-8-7 (pertaining to Tables 2-4 in the IAQM guidance (IAQM 2024) were used to determine the sensitivity of the area to dust soiling effects, human health impacts and ecological impacts respectively.

Table 8-8-5: Sensitivity of the Area to Dust Soiling Effects on People and Property.

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20m	<50m	<100m	<250m
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 8-8-6: Sensitivity of the Area to Human Health Impacts.

Receptor Sensitivity	Annual Mean PM_{10} Conc	Number of Receptors	Distance from Source (m)			
			<20m	<50m	<100m	<250m
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} Conc	Number of Receptors	Distance from Source (m)			
			<20m	<50m	<100m	<250m
		1-10	Low	Low	Low	Low
	<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

Table 8-8-7: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from Source (m)	
	<20m	<50m
High	High	Medium
Medium	Medium	Low
Low	Low	Low

8.2.3.1.2 Construction Traffic

During the construction phase, additional traffic trips will be necessary to allow site staff, plant, and materials to access the construction site.

Construction phase traffic has the potential to impact air quality and climate. The UK Highways Agency Design Manual for Roads and Bridges (DMRB) guidance (UK Highways Agency, 2019a), states that road links meeting one or more of the criteria set out below can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. This approach is considered best practice and can be applied to any development that causes a change in traffic

A detailed analysis of construction traffic volumes has been conducted to determine the expected HDV movements required to transport the materials extracted and delivered to site, along with the passenger cars associated with construction workers and suppliers.

The EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality (2017) indicative criteria for requiring an air quality assessment, as shown in Table 8-8-8,

outlines the scoping criteria used to determine whether the construction traffic volumes for the Proposed Development can be scoped out or require an assessment based on the changes between the Do Minimum traffic flows (without the Proposed Development) and the Do Something traffic flows (with the Proposed Development).

Table 8-8-8: Extract from EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality (2017) - Table 6.2: Indicative criteria for requiring an air quality assessment.

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans 3.5t gross vehicle weight). 2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere. A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate / decelerate, e.g. traffic lights, or roundabouts

8.2.3.2 Operation Phase

For the Operation Phase assessment, the air quality impact assessment focuses on the change in distribution of road vehicles and the likely effects of these changes on local air quality predicted to occur in the study area due to altered traffic flows on account of the operation of the Proposed Development.

The operational traffic data was screened to establish if traffic changes are expected due to the Proposed Development and if these changes may affect air quality. The screening criteria are based on the changes between the Do Something (DS) traffic (i.e. with construction) compared to the Do Minimum (DM traffic) in the year of opening. The traffic data was screened to establish if traffic changes are expected due to the Proposed Development and if these changes may affect air quality. This approach is consistent with the construction traffic assessment, where the criteria are based on the changes between the Do-Something (DS) operational traffic compared to the Do-Minimum (DM) traffic in the year of opening 2032.

The construction and operational traffic assessment methodology has used the UK Design Manual for Roads and Bridges Screening Model (UK Highways Agency 2007) (Version 1.03c, July 2007), the NOx to NO_2 Conversion Spreadsheet (UK Department for Environment, Food and Rural Affairs, 2020) (Version 9.1) and the guidance issued by Transport Infrastructure Ireland; Transport Infrastructure Ireland, Air Quality Assessment of Specified Infrastructure Projects Overarching Technical Guidance, PE-ENV-01106 (Dec. 2022).

In 2024, the UK Highways Agency DMRB air quality guidance was revised with LA 105 Air Quality (LA105 Air Quality, Version 0.1.0, June 2024). This revised document outlines a number of changes for air quality assessments in relation to road schemes but can be applied to any development that causes a change in traffic. The DMRB air quality spreadsheet is widely used as a screening assessment tool for air quality impact assessments in Ireland with

detailed modelling only required if this screening tool indicated potential non-compliance with the air quality standards. However, the DMRB spreadsheet tool was last revised in 2007 and only accounts for modelled years up to 2025. Vehicle emission standards up to Euro V are included but since 2017, Euro VI standards are applicable for the new fleet. In addition, the model does not account for electric or hybrid vehicle use. Therefore, this is a somewhat outdated assessment tool. The LA 105 guidance document states that the DMRB spreadsheet tool may still be used for simple air quality assessments where there is unlikely to be a breach of the air quality standards. Due to its use of an older and potentially higher polluting fleet, predicted vehicle emissions can be considered to be worst-case, when compared to more modern models. Therefore, the DMRB Screening Tool results will be conservative in nature and provide a worst-case assessment.

LA 105 Air Quality guidance states that modelling should be conducted for NO_2 for the base year and opening year for both the do minimum (do nothing) and do something scenarios. Modelling of PM_{10} is only required for the base year or the base year to demonstrate that there is no impact or exceedance of the PM_{10} air quality thresholds as a result of the project. Where the air quality modelling indicates exceedances of the PM_{10} air quality thresholds in the base year then PM_{10} should be included in the air quality model in the do minimum and do something scenarios. Modelling of $PM_{2.5}$ is not required as there are currently no issues with compliance with regard to this pollutant. The modelling of PM_{10} can be used to show that the project does not impact on the $PM_{2.5}$ limit value as if compliance with the PM_{10} limit is achieved then compliance with the $PM_{2.5}$ limit will also be achieved. Historically modelling of carbon monoxide (CO) and benzene was required. However, this is no longer needed as concentrations of these pollutants have been monitored to be significantly below their air quality limit values in recent years, even in urban centres (EPA, 2021). The key pollutants assessed are NO_2 and of PM_{10}.

Conversion of NOx to NO_2

The method to convert roadside NOx to NO_2 within the DMRB model was based on measurements made between 1999 and 2001. Recent evidence shows that the proportion of primary NO_2 in vehicle exhaust has increased. This means that the relationship between NOx and NO_2 at the roadside has changed from that currently used in the DMRB model. An updated NOx to NO_2 calculator is available from the DEFRA website (version 9.1, August 2024). The calculator applies to all road types and can also be used to estimate roadside NOx from roadside NO_2 measurements. The use of the DMRB model has been adapted to use the new calculator in accordance with the relevant instructions.

DMRB model validation work carried out by the Highways Agency has indicated that the model may significantly under-predict concentrations of nitrogen dioxide alongside urban city-centre roads classified as ‘street canyons’. In this context, a street canyon may be defined as a relatively narrow street with buildings on both sides, where the height of the buildings is generally greater than the width of the road. It has been decided that on review of the streetscapes in proximity to the site that a street canyon effect is unlikely to occur as there are relatively open areas in close proximity to the site.

DEFRA has stated that if the annual mean objectives are not exceeded, it may be confidently assumed that the short-term (1-hour) objectives will also be met. However, if this approach is used, then care must be taken to include relevant locations where the hourly objectives might

apply. If the annual mean nitrogen dioxide concentration is greater than 60 µg/m3, then there is a risk that the 1-hour objective may also be exceeded.

The calculator includes Local Authorities in Northern Ireland and the TII guidance recommends the use of 'Armagh, Banbridge and Craigavon' as the choice for local authority when using the calculator. The choice of Craigavon provides the most suitable relationship between NO_2 and NOx for Ireland. The "All Other UK Traffic" traffic mix option was used.

Assessment of Impact on Ecological Designated Sites

In line with TII and DMRB guidance, consideration of air quality impacts should also be given to ecological habitats with a national or international designation that are located within 200m from the roads assessed within the study area and where a significant change in AADT flows (>5%) will occur. Nitrogen oxides concentrations and nitrogen deposition rates are calculated within the designated site. The results are then compared with the NOx standard for the protection of vegetation of 30 µg/m^3 and the incremental change due to the Proposed Development identified. Where the Proposed Development is expected to cause an increase in concentrations of more than 2 µg/m^3 and the predicted concentrations (including the background) are close to (within 10% of), or exceed the standard, then the sensitivity of the habitat to NOx should be assessed by the project ecologist.

8.2.4 Assessment of Significance of Potential Effects

In terms of significance of potential environmental effects, the magnitude (scale of change) has been determined by considering the impacts of the Proposed Development on air quality with reference to the baseline conditions and environmental assessment criteria.

8.2.4.1 Describing the impact:

The rationale for describing the impact of the Proposed Development is derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) "Land-Use Planning & Development Control: Planning for Air Quality (January 2017).

There is a two-stage process to be followed in the assessment of air quality impacts:

- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
- a judgement on the overall significance of the effects of any impacts

The suggested framework for describing the impacts is set out in Table 6.3 of the EPUK & IAQM guidance document and is shown in Table 8-8-9. The term Air Quality Assessment Level (AQAL) has been adopted as it covers all pollutants, i.e. those with and without formal standards. AQAL is used to include air quality objectives or limit values where these exist. The Environment Agency uses a threshold criterion of 10% of the short term AQAL as a screening criterion for the maximum short-term impact. The EPUK & IAQM guidance adopts this as a basis for defining an impact that is sufficiently small in magnitude to be regarded as having an insignificant effect.

Table 8-8-9: Impact Descriptors for Individual Receptors

Long term average Concentration at Receptor in assessment year	& Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	**2-5**	**6-10**	**>10**
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Moderate
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Explanation

1. AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'.

2. The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5% will be described as Negligible.

3. The Table is only designed to be used with annual mean concentrations.

4. Descriptors for individual Receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a 'moderate' adverse impact at one Receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.

5. When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.

6. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.

7. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.

8.2.4.2 Assessing Significance

The rationale for the assessment of significance is derived from the EPUK & IAQM Guidance (paragraphs 7.1-7.12 referring to Table 6.3) and relates to **Error! Reference source not found.**.

Impacts on air quality, whether adverse or beneficial, will have an effect on human health that can be judged as 'significant' or 'not significant'. An 'impact' is the change in the concentration

of an air pollutant, as experienced by a receptor. This may have an 'effect' on the health of a human receptor, depending on the severity of the impact and other factors that may need to be taken into account. The impact descriptors set out in Table 8-8-9 are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual receptors. Whilst it may be that there are 'slight', 'moderate' or 'substantial' impacts at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances.

Any judgement on the overall significance of effect of a development will need to take into account such factors as:

- the existing and future air quality in the absence of the development;
- the extent of current and future population exposure to the impacts;
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts; and
- other factors may be relevant in individual cases.

8.3 The Existing and Receiving Environment (Baseline Situation)

8.3.1 Baseline Air Quality

No baseline air quality or dust deposition surveys have been undertaken. Reference has been made to relevant EPA monitoring data to quantify the existing air quality in proximity to the Proposed Development site.

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The National Ambient Air quality Network is a series of air quality monitoring stations across the country. Air quality data from the stations is assessed against the European legal limit values and WHO guideline values.

The most recent annual report on air quality produced by the Air Quality in Ireland 2024 (EPA (2025), details the range and scope of monitoring undertaken as part of the National Ambient Monitoring Programme (AAMP) which commenced at the end of 2017. The report concluded that Ireland met all of its EU CAFÉ Directive legal requirements in 2024. However, while Ireland generally meets EU legal air quality limits, it still falls short of the more stringent health-based WHO air quality guidelines for certain pollutants. Achieving future targets will be very challenging. The two most significant pollutants in Ireland is particulate matter from burning solid fuel, and nitrogen dioxide from vehicle emissions/traffic.

The Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Clean Air for Europe Directive) requires that areas are divided into zones for the assessment and management of air quality. In Ireland, Zone A is the Dublin Conurbation, Zone B is the Cork Conurbation, Zone C is all large towns in Ireland with a population >15,000 and Zone D is all remaining area. In terms of air quality, the Proposed Development site is categorised as being in Zone A, the Dublin conurbation as denoted by the EPA.

The Environmental Protection Agency's Air Quality Index for Health (AQIH) is a number from one to 10 that identifies the current air quality currently in a region and whether or not this might affect human health. This reading is updated twice a day, once in the morning (by

9.30am) and once in the evening (by 19.30pm). A reading of 10 means the air quality is very poor and a reading of one to three inclusive means that the air quality is good. The AQIH readings are based on five air pollutants which can harm human health: Ozone gas, nitrogen dioxide gas, sulphur dioxide gas, $PM_{2.5}$ particles and PM_{10} particles. The AQIH at the monitoring station at Tallaght has a current rating of 1, meaning 'Good' air quality [index as of 10.00 hours, Tuesday, November 18th, 2025] (EPA, 2025)).

Nitrogen Dioxide (NO_2), and Particulate Matter (PM_{10} and $PM_{2.5}$) background concentrations from the EPA Air Quality monitoring station at the Tallaght site (EPA Station 44, 53.2807°N, -6.3589°E), located approximately 4.55 km east of the site has been referenced. The most recent year of data has been summarised and referenced (2024) in Table 8-8-10.

The EPA Annual Air quality Bulletin 2024 (EPA, 2025) indicates that the air quality monitoring station at Tallaght had no exceedances of the hourly limit for NO_2 of 200 µg/m^3 and no exceedances of PM_{10} 24-hr Mean > 50 µg/m^3 (days) relative to the current EU 2008 Limit Values (µg/m^3) in 2024. The monitoring results at the EPA Air Quality monitoring station at Tallaght for 2024 show a marginal exceedance of the 2021 WHO guidelines annual mean limit for NO_2 and $PM_{2.5}$. However, the Air Quality Standard limit values are not exceeded. The background air quality in the area of the development is of good quality.

Table 8-8-10: Annual Average Nitrogen Dioxide (NO_2), PM_{10} and $PM_{2.5}$ concentrations at Tallaght in 2024

Station	Period	Measured Concentration (µg/m^3)			
		NO_2 (µg/m^3)	NO_x (µg/m^3)	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
Tallaght	**2024**	12.1 ug/m^3	25.2 ug/m^3	10.4 ug/m^3	6.2 ug/m^3
Current EU 2008 Limit Values (µg/m^3)		40 µg/m^3 (Annual Limit for Protection of Human Health)	30 µg/m^3 (Annual Limit for Protection of Vegetation)	40 µg/m^3 (Annual Limit for Protection of Human Health)	20 µg/m^3 (Annual target value for the protection of Human Health)
EU 2024 Limit Values (µg/m^3) (Limit Values to be obtained by 1st January 3030)		20 µg/m^3 Annual Limit for Protection of Human Health)	30 µg/m^3 (Annual Limit for Protection of Vegetation)	20 µg/m^3 (Annual Limit for Protection of Human Health)	10 µg/m^3 (Annual target value for the protection of Human Health)
WHO Air quality Guideline (AQG)		10 µg/m^3	N/A	15 µg/m^3	5 µg/m^3

8.3.2 Effect of local meteorological conditions

A key factor in assessing temporal and spatial variations in air quality are the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and, for ground level sources such as traffic emissions, pollutant concentrations are generally

inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5} – PM_{10}$) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The 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 350 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity.

Dust generation rates during the Construction Phase depends on the construction activities, particle size, the moisture content of the material and weather conditions. 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.

Dust emissions are dramatically reduced where rainfall has occurred due to the cohesion created between dust particles and water and the removal of suspended dust from the air. High levels of moisture either retained in the soil or as a result of rainfall help suppress the generation of dust due to the cohesive nature of water between dust particles. Rain also assists in removing dust from the atmosphere through washout. Wind can lift particles up into the air and transport the dust downwind as well as drying out the surface. The worst dust deposition conditions typically occur, therefore, during dry conditions with strong winds.

The nearest representative weather station collating detailed weather records is Casement Aerodrome meteorological station, which is located approximately 2 km north of the site. Casement Aerodrome met data has been examined to identify the prevailing wind direction and average wind speeds over a five year period (see Figure 8-8:1). For data collated during five representative years (2016 - 2020), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.5 m/s over the period 1981 - 2010 (Met Eireann, 2022).

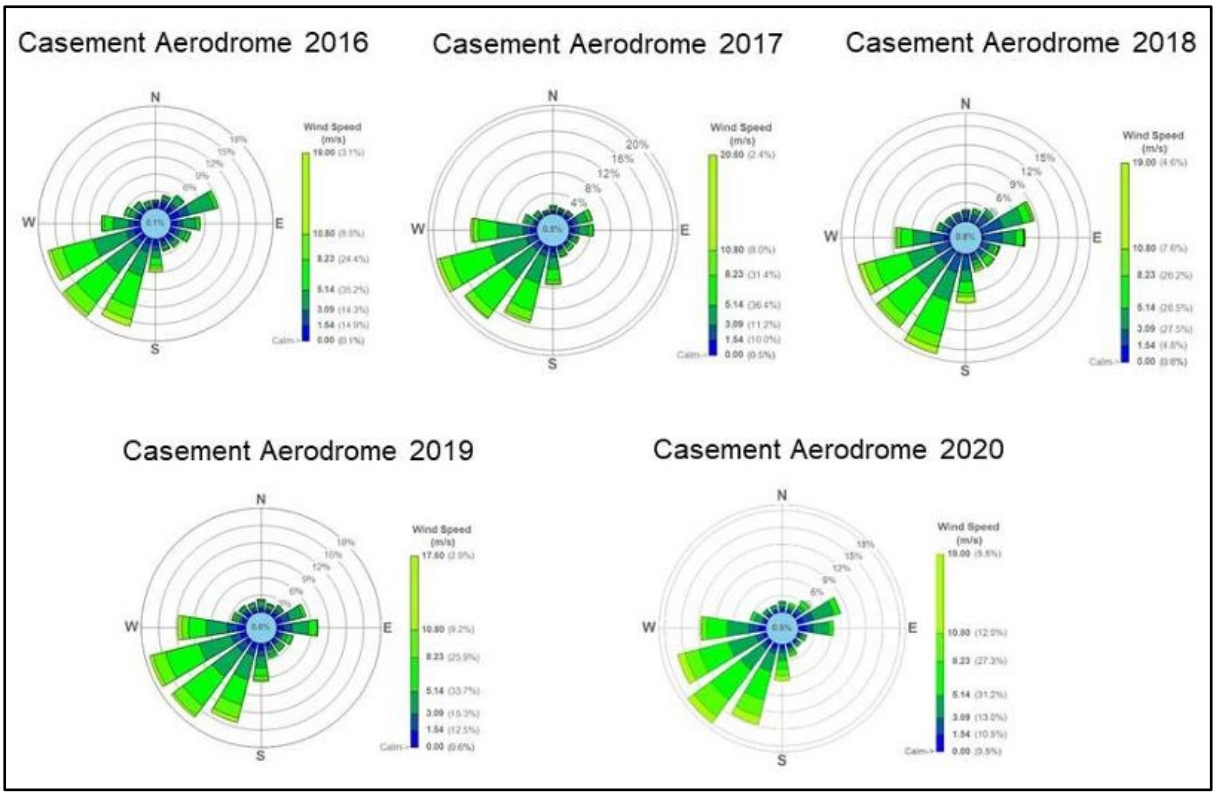

Figure 8-8:1: Casement Aerodrome Windrose 2016-2020 (Met Eireann, 2022)

It is typical to assume no dust is generated under “wet day” conditions where rainfall greater than 0.2mm (USEPA 2006) has fallen. A review of historical 30 year average data for Casement Aerodrome indicates that on average 183 days per year have rainfall over 0.2 mm (Met Eireann, 2021). Therefore, it can be determined that approximately 50% of the time dust generation will be reduced.

8.3.3 Receptor Locations

8.3.3.1 Sensitive Human Receptors

The sensitive residential receptors considered as part of the air quality assessment is the nearest existing residential property to the Proposed Development and future residents of the Proposed Development adjacent to the proposed site access roads.

The receptor locations assessed in the DMRB traffic emissions screening tool are shown in Figure 8-8:2 and summarised in Table 8-8-1.

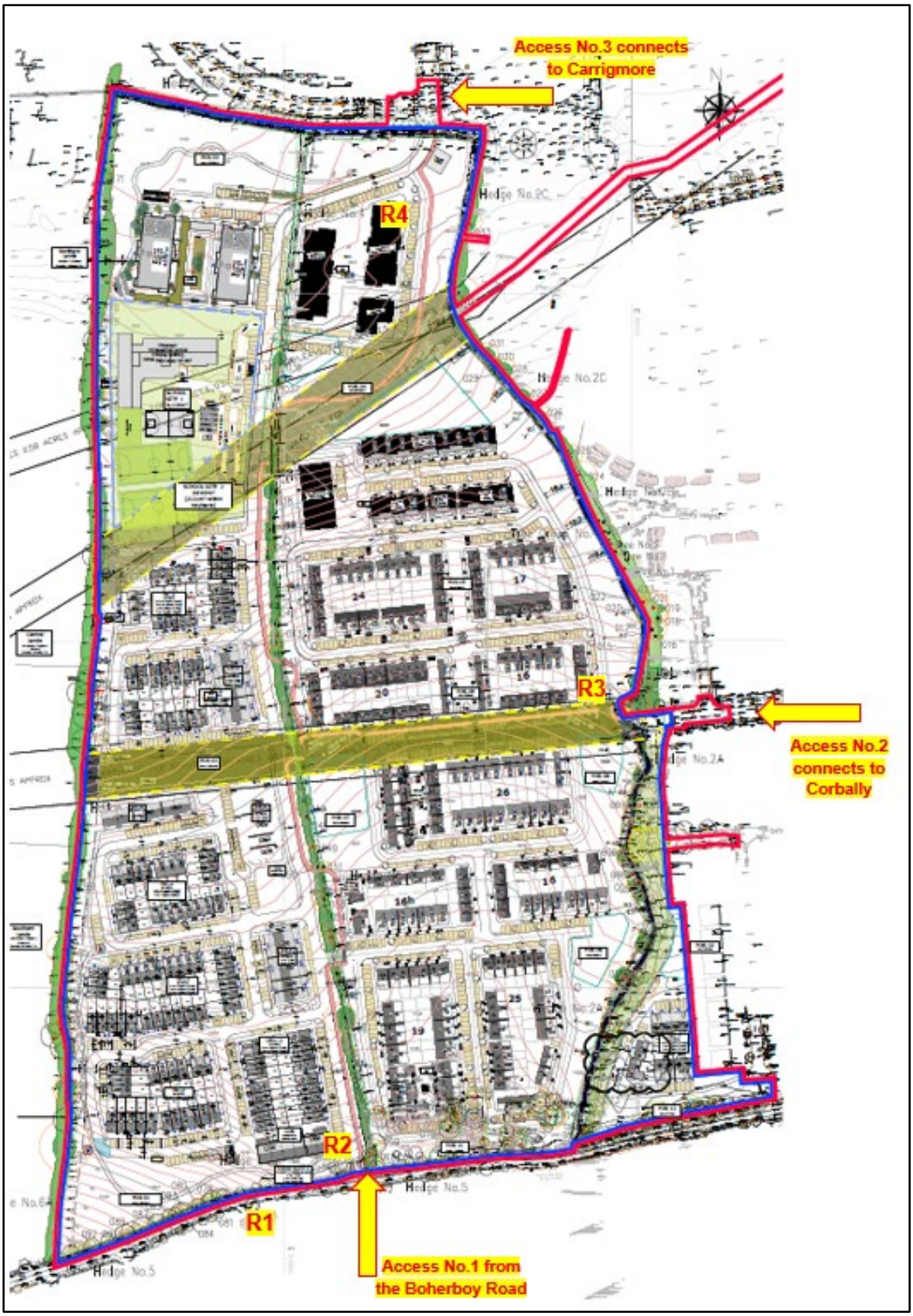

Figure 8-8:2: Residential Receptors used in the DMRB Assessment

Table 8-8-11: Sensitive Residential Receptor locations assessed in the DMRB Screening Method of Traffic Emissions Air Quality Impact Assessment

Receptor Description and Location	ITM Grid Reference	Distance to Road
R1 - Residents of Proposed Development	704683, 726045	@ 40m from façade to centre of Boherboy Road @ 100m from façade to centre of Access Road No. 1 @ 100m from façade to centre N81
R2 -Future Residents of Proposed Development, Phase 1A	704751, 726161	@ 45m from façade to centre of Boherboy Road @ 15m from façade to centre of Access Road No. 1 @ 200m from façade to centre N81
R3 -Future Residents of Proposed Development, Phase 2B	704941, 726394	@ 425m from façade to centre of Boherboy Road @ 10m from façade to centre of Access Road No. 2
R4 -Future Residents of Proposed Development, Phase 3B	704805, 726719	@ 10m from façade to centre of Access Road No.3

8.3.3.2 Sensitive Ecological Receptors

There are six designated sites located within the vicinity of the proposed development. The nearest designated site is Glenasmole Valley SAC, located c. 4.17km to the south-east of the proposed development site in the Dublin Mountains. This is outside the zone of influence of the Proposed Development.

8.3.4 Air Quality Impact due to Traffic Emissions

Traffic flow information was obtained from Pinnacle Consulting Engineers. Data for the base year 2025, construction year 2030 and operational year 2032 Do Nothing and Do Something scenarios were provided.

The air quality impact assessment due to changes in traffic flows is based on assessing existing and predicted traffic flows for the surrounding road network. The traffic flows on the surrounding road network for the base year 2025 are shown in

Table 8-8-12. The traffic flows on the surrounding road network for the construction year 2030 and the proposed year of opening 2032 for the ‘do nothing’ and ‘do something’ assessment scenarios are shown in Table 8-8-13. Figure 8-8-3 shows the corresponding Site No./Road links referred to. In the tables. The following tables includes the potential for cumulative effects of the Proposed Development in operation in combination with other permitted and proposed developments in the vicinity of the site that may contribute to cumulative effects on the surrounding transport network. Background concentrations have been included as per Section 8.3.1 of this chapter based on available EPA background monitoring data from the nearest ambient air quality station located in Tallaght (EPA, 2025).

Table 8-8-12: AADT traffic flows for the base year 2025

Site No	Location	2025 AADT	HGV
1	Citywest Road/Citywest Road	20,930	4.80%
2	Fortunestown Lane/Carrigmore	7,578	1.63%
3	Garter Lane/ Fortunestown Lane	12,513	1.63%
4	Slade Road/Boherboy Road	13,328	2.53%
5	Development Access	4 826	3.92%
6	Boherboy Road/N81	14,487	8.01%
7	N81/N82	18,337	6.45%
8	N82/Corbally Access	15,147	5.51%

Table 8-8-13: Predicted AADT traffic flows in construction year 2030 and proposed year of operation 2032

	Construction					Operational				
Site	**Trip Distribution**	**AADT (Do Nothing) 2030**	**Construction Flows**	**HGV**	**% Impact**	**Trip Distribution**	**AADT (Do Nothing) 2032**	**Development Flows**	**HGV**	**% Impact**
1	0.00%	22,628	0	0	0.00%	16.72%	22,841	1054	0	4.61%
2	0.00%	8,193	0	0	0.00%	21.53%	8,270	1357	0	16.41%
3	0.00%	13,529	0	0	0.00%	4.81%	13,657	303	0	2.22%
4	0.00%	14,410	0	0	0.00%	3.68%	14,546	232	0	1.60%
5	100.00%	5,218	810	81	15.52%	6.81%	5,267	429	0	8.15%
6	100.00%	15,662	810	81	5.17%	1.91%	15,810	120	0	0.76%
7	100.00%	19825	810	81	4.09%	12.27%	20,012	773	0	3.86%
8	0.00%	16,376	0	0	0.00%	32.27%	16,530	2034	0	12.30%

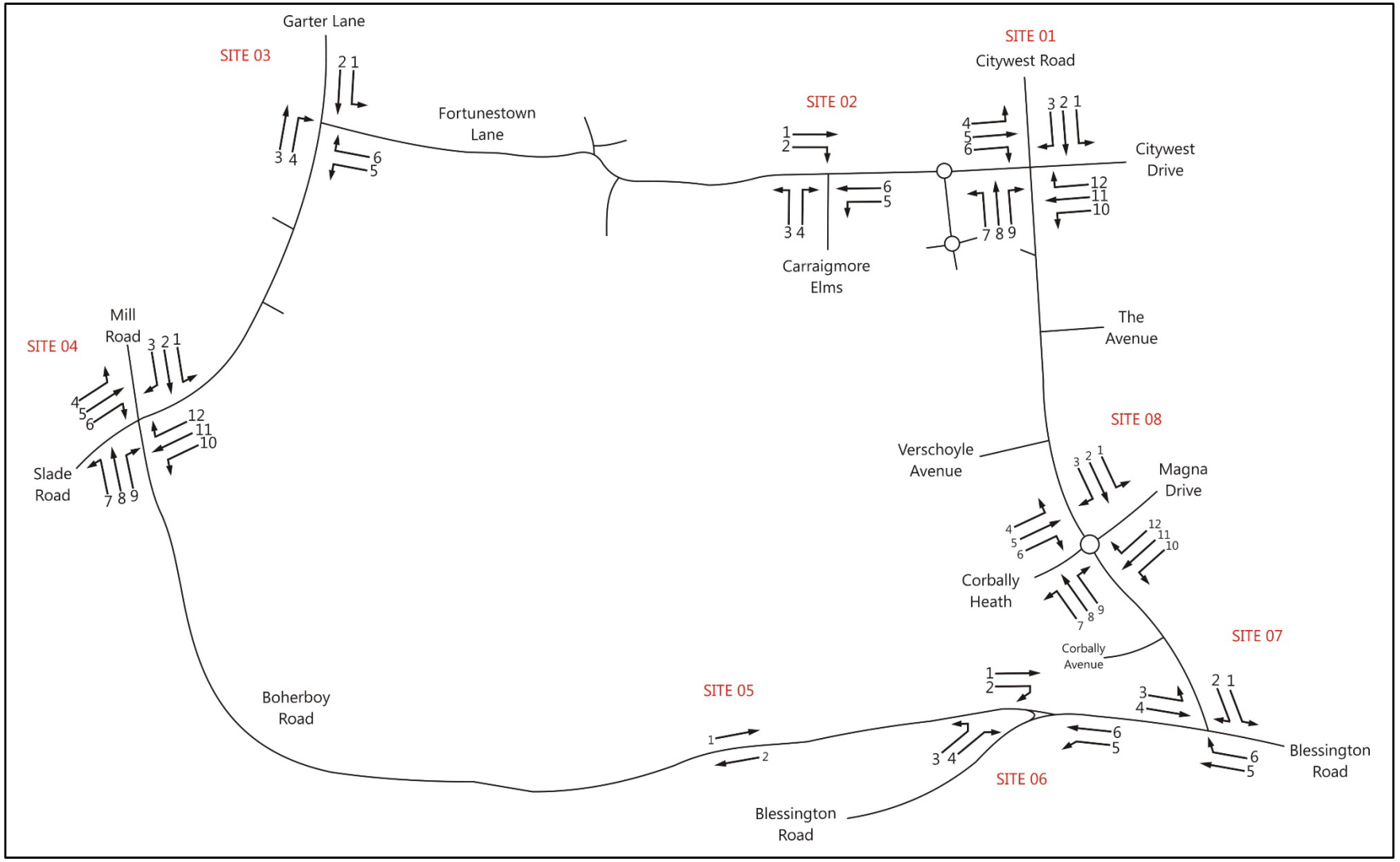

Figure 8-8-3: Site Locations/Road Links

8.4 Characteristics of the Proposed Development

Chapter 2 of this EIAR includes a full detailed description of the Proposed Development.

8.4.1 Construction Phase

During the construction stage the main source of air quality impacts will be as a result of fugitive dust emissions from site activities. Emissions from construction vehicles and machinery have the potential to impact air quality.

8.4.2 Operational Phase

During the Operation Phase, the most significant potential impact with respect to air quality will be because of the potential air quality impacts associated with altered traffic flows within the Study Area due to the operation of the Proposed Development.

The following section describes the primary sources of potential air quality and climate impacts which have been assessed as part of this EIAR.

8.5 Potential Impact of the Proposed Development

The air quality impact of the Proposed Development has been assessed for the each of the two distinct phases:

- Construction Phase; and
- Operational Phase

8.5.1 Construction Phase

8.5.1.1 Construction Dust Impact Assessment

The greatest potential impact on air quality during the construction phase is from construction dust emissions, PM_{10} and $PM_{2.5}$ emissions and the potential for nuisance dust. Dust is characterised as encompassing particulate matter with a particle size of between 1 and 75 microns (1- 75µm), therefore includes both PM_{10} and $PM_{2.5}$. Deposition typically occurs in close proximity to a construction site and potential impacts generally occur within 50m of the haul routes used by construction vehicles on the public road, up to 250 m from the construction site entrance(s).

This section of the chapter provides an overview of the typical activities that have potential for dust impacts during the construction phase of the Proposed Development The potential for dust emissions due to construction can vary substantially day to day and are strongly influenced by the level of activity, the specific operations, and the prevailing meteorological conditions.

The type of construction activities that could cause fugitive dust emissions are demolition; earthworks; handling and disposal of spoil; wind-blown particulate material from stockpiles; handling of loose construction materials; and movement of vehicles, both on and off site. The main effect of any dust emissions, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars and laundry. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects.

The Dust Impact Assessment has been undertaken in accordance with IAQM Guidance on the assessment of dust from demolition and construction, (Institute of Air quality Management (IAQM), London. 2024, (version 2.2)), to predict the risk of dust impacts and the level of mitigation that is required to control the residual effects to a level that is "not significant".

The Construction Dust Impact Assessment steps are outlined below:

8.5.1.1.1 Step 1: Screening the Need for a Detailed Assessment

A Construction Dust Impact Assessment is deemed to be required because of the following;

- There are 'human receptors' within 250 m of the Proposed Development site boundary; and
- There are 'human receptors' within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s)

8.5.1.1.2 Step 2: Assess the Risk of Dust Impacts

The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts has been determined using the four risk categories: negligible, low, medium and high risk. The construction site area (i.e. within the Proposed Development boundary) has been allocated to a risk category based on the following approach;

- Step 2A – definition of the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large;
- Step 2B - definition of the sensitivity of the area to dust impacts, which is defined as low, medium or high sensitivity; and
- Step 2C – determination of the risk of dust impacts with no mitigation applied.

8.5.1.1.2.1 Step 2A: Define the Potential Dust Emission Magnitude

The potential dust emission class for the Proposed Development were determined using the criteria detailed in Table 8-8-3. There will be 18.7 hectares (ha) of land permanently acquired for the construction of the Proposed Development including the residential development and proposed creche. Also included is the provision of pedestrian and cycle connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

The proposed development will have a requirement for imported materials, primarily concrete, steel, stone and asphalt. The majority of new materials brought to site will be used immediately. The remainder will be stored within the site boundary. Material excavated on the site will be used in construction. The re-use of this material reduces the quantity of materials being imported to the site. Prior to use, this material will be subject to appropriate testing to ensure material is suitable for construction. Locations to stockpile this material will be identified by the contractor(s) in the CMP.

<u>Demolition</u>

There is very little demolition proposed i.e. demolition of existing agricultural outbuilding at the southern end of the site. The development will principally consist of the demolition of the existing, vacant agricultural outbuildings on site (996m^2).

Therefore, as per the suggested criteria detailed in Table 8-8-3**:**

- Demolition volume is, 181m^3 .Therefore <12,000m^3;
- Potentially dusty construction material (e.g. concrete); and
- Demolition activities are <6m above ground level.

Therefore the dust emission magnitude for Demolition is defined as **Small.**

Earthworks

Earthworks covers the processes of soil-stripping, ground-levelling, excavation and landscaping. Excavation and fill operations to enable the construction of the Proposed Development will require a quantity of excavated material to be removed from the site to suitable locations. As a result, there is anticipated to be a need for haulage of material on the existing road network.

GSI publications and mapping indicate that the site is underlain primarily by glacial till derived from Sandstone and Shale. The soil association composition as determined from the Teagasc website datasets on the EPA website show the soil to be slightly gravelly sandy clay/silt.

Earthworks figures provided by DNV include:

- Total Cut: 184,422m^3
- Total Fill: 249,228 m^3
- Total Exported: 103,689 m^3
- Total Imported: 164,654 m^3

Therefore, as per the suggested criteria detailed in Table 8-8-3**:**

- Total site area is 18.5 ha; >110,000m^2;
- Potentially dusty soil type (clay); and
- >10 heavy moving earth moving vehicles active at any one time;

Therefore, the dust emission magnitude for Earthworks is defined as **Large.**

Construction

Construction includes any activity involved with the provision of a new structure (or structures), its modification or refurbishment. In summary , the Proposed Development comprises the construction of 627 no. dwellings, comprised of 306 houses 133 duplex units and 188 apartments and a 2-storey crèche. Net site area (Developable lands) is 12.0ha.

The proposed development will have a requirement for imported materials, primarily concrete, steel, stone and asphalt. Material excavated on the site will be used in construction. The re-use of this material reduces the quantity of materials being imported to the site. Prior to use, this material will be subject to appropriate testing to ensure material is suitable for construction.

Therefore, as per the suggested criteria detailed in Table 8-8-3**:**

- Total building volume is >75,000m^3;

- Potentially dusty construction material (concrete); and
- On site concrete batching expected;

Therefore, the dust emission magnitude for Construction is defined as **Large.**

Trackout

Trackout includes the transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

During the construction of the Proposed Development, materials will be required to be imported including earthworks fill materials that cannot be sourced on-site, concrete products, steel materials, stone and asphalt.

The haulage of materials and workers to and from the site of the Proposed Development will create a significant temporary impact on both road users and residents living along the haul roads. It is proposed that access to the site will be via a newly formed access off the Boherboy Road. This will coincide with the finished development access.

All access roads used by contractors will be monitored for mud and any construction materials and cleared using a shovel and broom and if required a mechanical road sweeper. The construction period for the proposed development is anticipated to be approximately 5 years from the commencement of the site works.

- It is assumed that there will be 20-50 outward HDV trips on average / day.,
- Potentially dusty construction material (e.g. high clay content)
- Unpaved road length >100 m.
- Therefore, the dust emission magnitude for trackout was defined as **Large.**

8.5.1.1.2.2 Step 2B: Define the Sensitivity of the Area

The sensitivity of the area takes account of a number of factors:

- the specific sensitivities of receptors in the Study Area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

The criteria for determining the sensitivity of the area to dust soiling effects on people and property, to human health impacts and to ecological impacts are detailed in Table 8-8-5 - Table 8-8-7.

Table 8-8-14 outlines the range of numbers of properties within specific distance bands from the proposed construction activities to determine the receptor sensitivity of the area to Dust Soiling Effects on People and Property.

Table 8-8-14: Cumulative number of sensitive receptors within 20m, 50m, 100m and 250m of the Proposed Development

Parameter	Number of Receptors within Distance from site (m)			
	<20m	<50m	<100m	<250m
Total No. of Receptors in proximity to the Proposed Development Earthworks and Construction	18	~53	~185	>200
Receptor Sensitivity Earthworks and Construction	High	Medium	Medium	Low
Total No. of Receptors in proximity to the Proposed Development Demolition	0	0	0	~50
Receptor Sensitivity Demolition	Low	Low	Low	Low
Total No. of Receptors in proximity to the Proposed Development Demolition	-	~50	-	-
Receptor Sensitivity Trackout	-	High	-	-

Sensitivity of People to Dust Soiling

- Earthworks and Construction: Table 8-8-14 indicates there are 18 high sensitivity receptors <20m from the Proposed Development site boundary. There are approximately a further 35 properties within 50m of the Proposed Development site boundary

  (*The IAQM guidance states that a high sensitivity receptor is where: users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land*).

- Demolition: There is very little demolition proposed; an existing agricultural outbuilding at the southern end of the site will be demolished. There are no high sensitivity receptors <100m from the Proposed Development site boundary. There are approximately 50 properties within 250m of the Proposed Development site boundary

Therefore, based on Table 8-8-5**,** the sensitivity of the Area to Dust Soiling Effects on People and Property for is **High**; in terms of potential earthworks and construction and **Low** in terms of potential demolition dust impacts.

- Trackout: For trackout, the distances should be measured from the side of the roads used by construction traffic (the public highway or road used by site vehicles). The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road. The site access road through the proposed development is considered in the trackout dust assessment. Considering the phased nature of the Proposed Development of future residential receptors in the early phases are considered within 50m from the access road used by construction traffic The number of receivers is counted as the number of apartments in building blocks

- It is estimated that > 50 units (high sensitive receptors) will be <50m from the edge of the road used by construction traffic.

Therefore, based on Table 8-8-5**,** the sensitivity of the Area to Dust Soiling Effects on People and Property is **High**; in terms of trackout dust impacts.

Sensitivity of the Area to Human Health Impacts

As stated, there are 18 high sensitive receptors <20m from the proposed development site boundary. Table 8-8-10 outlines baseline air quality in the local area. The PM_{10} concentration recorded at the EPA Air Quality monitoring station in Tallaght for 2024 is 10.4 µg/m^3 , which is below the 2024 EU limit value of 20µg/m^3 for the protection of human health and below the WHO AQG of 15µg/m^3.

There are 18 sensitive receptors within 20m of the Proposed Development boundary. As shown in Table 8-8-6, the sensitivity of the area to Human Health Impacts is **Low;** in terms of potential demolition, earthworks, construction and trackout dust.

Sensitivity of the Area to Ecological Impacts

Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities. Dust can have two types of effect on vegetation: physical and chemical. Direct physical effects include reduced photosynthesis, respiration and transpiration through smothering. Chemical changes to soils or watercourses may lead to a loss of plants or animals for example via changes in acidity. Indirect effects can include increased susceptibility to stresses such as pathogens and air pollution. 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.

There are six designated sites located within the vicinity of the proposed development. The nearest designated site is Glenasmole Valley SAC, located c. 4.17km to the south-east of the proposed development site in the Dublin Mountains. Therefore, based on Table 8-8-7**,** the sensitivity of the Area to Ecological Impacts is **Low**; in terms of potential earthworks, construction and track out dust impacts.

The sensitivity of the area to dust soiling, human health impacts and ecological impacts for each activity is summarised in Table 8-8-15

Table 8-8-15: Outcome of Defining the Sensitivity off the area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	High	High	High
Human Health	Low	Low	Low	Low
Ecological Impacts	Low	Low	Low	Low

8.5.1.1.2.3 Step 2C: Define the Risk of Impacts

In accordance with the IAQM Guidance, the dust emission magnitude (Step 2A) and sensitivity of the area (Step 2B) have been combined with no mitigation applied. The level of risk of dust soiling, impact on human health and ecological impact for each activity before mitigation, is summarised in Table 8-8-16.

The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring. The dust risk categories for each of the four activities determined in Step 2C is used to define the appropriate, site-specific, mitigation measures to be adopted. For those cases where the risk category is 'negligible', no mitigation measures beyond those required by legislation will be required.

Table 8-8-16: Summary Dust Risk to Define Site-specific Mitigation

Potential Impact	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Negligible	High Risk	High Risk	High Risk
Human Health	Negligible	Low Risk	Low Risk	Low Risk
Ecological Impacts	Negligible	Low Risk	Low Risk	Low Risk

8.5.1.1.3 Step 3: Site-specific Mitigation

In accordance with the IAQM Guidance, for proposed mitigation measures, the highest risk category should be applied. Therefore, the mitigation measures applicable to a **High Risk Site** should be applied as outlined in Section 8.6.

8.5.1.2 Construction Traffic

During the construction phase, additional traffic trips will be necessary to allow site staff, plant, and materials to access the construction site. This will temporarily increase traffic on the road network surrounding the Proposed Development area. Traffic generation during construction will mainly originate from various sources, including Heavy Goods Vehicles (HGVs) and construction staff/site visitors passenger cars

HGV traffic will result from delivering construction and fill materials to the site and removing surplus excavated materials, if any. This will fluctuate throughout the construction period, depending on the activities taking place at any specific time. Construction tasks that are likely to generate the highest volumes of HGVs delivering materials include those involved in earthworks, building various structures, drainage, and pavements.

Construction traffic can impact directly on local air quality generally and on any sensitive receptors that are located adjacent to the road networks being used during construction. The significance of air quality impacts due to vehicle emissions during the construction phase is dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes.

All construction traffic will route via the new access on Boherboy Road, which will act as the single point of entry and exit for the duration of the works. It is assumed that a total of 810 movements/day will be generated during peak construction activities with 81 HGV vehicles

The EPUK & IAQM Land-Use Planning & Development Control: Planning for Air Quality (2017) indicative criteria as shown in Table 8-8-8 suggests that an air quality impact assessment due to changes in construction traffic flows is required for this project. Therefore, a DMRB Screening Method assessment has been undertaken.

The Boherboy road is used in the assessment with the existing residential receptor R1 as shown in Figure 8-8:2: Residential Receptors used in the DMRB Assessment.

Table 8-8-17 indicates the increase in overall traffic compared to baseline traffic volumes for the assumed year of construction 2030. Traffic volumes for the 2030 scenario are based on the 2024 Do Minimum flows along the affected road network.

Table 8-8-17: Construction-related additional traffic vs baseline conditions

Location	2030 construction traffic					
	AADT	HGV	Construction Flows	% HGV Construction Flows	AADT (During Construction) 2030	%HGV
Boherboy Road (Site 5)	5218	5%	810	81 (10%)	6028	5.70%
Access Rd No.1	0	0	810	81 (10%)	810	10%

A speed of 60 Kph has been used for Boherboy Road and a speed of 20 Kph has been assumed for Access Road No.1 in the DMRB Screening Assessment.

The annual mean PM_{10} concentration of 10.4 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as a background concentration in the DMRB model to predict the PM_{10} concentration at the receptor location R1 during construction.

The predicted NOx and PM_{10} concentrations at the receptor location R1 is presented in Table 8-8-18.

Table 8-8-18: DMRB Screening Method predicted NOx and PM_{10} concentrations at the receptor location R1 in the Year of Opening 2030, Without and With Development (µg/m^3).

Location	DMRB Predicted Annual Mean NOx (µg/m^3) at R1.	DMRB Predicted Annual Mean PM_{10} (µg/m^3) at R1.
@ R1 Without Development	1.43	10.54
@ R1 With Development	1.83	10.58

Using the NO_x to NO_2 calculator, the DMRB Screening Method predicted NO_x concentrations have been used to predict the NO_2 concentrations at the receptor location R1. The annual mean NO_2 concentration of 12.1 µg/m^3 and the mean NO_x concentration of 25.2 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as the background concentration in the NO_x to NO_2 calculator to predict the NO_2 concentration at the receptor location R1.

The predicted NO_2 and PM_{10} concentrations at the receptor location in the construction year 2030 are presented in Table 8-8-19.

Table 8-8-19: Predicted Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) concentrations at the receptor location R1 in the Year of Opening 2032, Without and With Development ($\mu g/m^3$).

Location and Scenario	Annual Mean NO_2 ($\mu g/m^3$)	Annual Mean PM_{10} ($\mu g/m^3$)
@ R1 Without Development	12.79	14.89
@ R1 With Development	12.98	14.90

The predicted NO_2 and PM_{10} concentrations have been compared with the relevant Air Quality Standard Regulations 2011 (S.I. No. 180 of 2011) (See Table 8-8-1). The results of the DMRB Screening Method and subsequent Air Quality Impact Assessment for NO_2 and PM_{10} indicate that there will not be an exceedance of the relevant Air Quality Limit Values for NO_2 and PM_{10} at the sensitive receiver (R1) during construction

Table 8-8-20 summarises the description of magnitude of impact on NO_2 and PM_{10} concentrations at the receptor locations in the year of opening 2030, in accordance with the rationale for describing the impact of the proposal derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) Land-Use Planning & Development Control: Planning for Air Quality (January 2017).

Table 8-8-20: Description of magnitude of impact in terms of NO_2 and PM_{10} concentrations at the receptor location R1 during construction in 2030.

Location and Scenario	Absolute Change in Year of Opening	Relative Change in % of AQAL	Percentage predicted concentration relative to AQAL	Predicted Impact
NO_2 @ R1 – With Dev.	0.19	0.48%	32.45%	Negligible
PM_{10} @ R1 – With Dev.	0.01	0.02%	37.25%	Negligible

As outlined in *Section 7 Assessing Significance* of the EPUK & IAQM guidance document a judgment of significance should be made by a competent professional. The results of the DMRB Screening Method and subsequent Air Quality Impact Assessment indicate that here is no potential for significant impacts to air quality during construction as a result of traffic emissions. Existing residents in the area will not experience a significant air quality impact.

In terms of annual mean NO_2 and PM_{10} concentrations from construction traffic emissions, there will be a negligible impact (See Table 8-8-9). The long-term average concentration at R1 during the construction phase will be less than 75% of the relevant Air Quality Assessment Level (AQAL) and the percentage change in concentration will be <1% of the AQAL.

8.5.2 Operational Phase

8.5.2.1 Air Quality Impact due to Traffic Emissions

The air quality impact assessment due to changes in traffic flows is based on assessing existing and predicted traffic flows for the surrounding road network. The traffic flows on the surrounding road network for the base year 2025 and the proposed year of opening 2032 ‘do nothing’ and ‘do something’ assessment scenarios are shown in Table 8-8-21, as supplied by Pinnacle Engineering.

The study area for the assessment encompasses the local and strategic road network surrounding the site, including Boherboy Road (L2008) as the primary site access route, the connecting N81 corridor, and the adjacent Carrigmore and Corbally residential estates. The wider context also includes links to Fortunestown and Citywest, which provide access to higher-order road, cycle, and public transport networks, including the Luas Red Line and Dublin Bus services

Primary vehicular access to the development will be via Boherboy Road (Access No. 1), via Corbally Estate (Access No. 2) and via Carrigmore (Access No. 3) as shown in Figure 8-8:2.

Table 8-8-21: Predicted AADT traffic flows for Baseline scenario (2025), and Future traffic flows scenario 2032 without and with the proposed development in operation.

AADT Traffic Flow	Baseline 2025		Opening Year 2032			
	AADT	%HGV	AADT (Do Nothing) 2032	Development Flows	AADT (Do Something) 2032	%HGV (Do Nothing & Do Something)
Boherboy Road (Site 5)	4,826	3.92%	5,267	429	5,696	5%
Access Road No.1	0	0%	0	429	429	0%
Boherboy Rd/N81 (Site 6)	14,487	8.01%	15,810	120	15,930	5%
N82 Citywest Road/Corbally Access (Site 8)	15,147	5.51%	16530	2,034	18,564	5%
Access Road No.2 (Corbally)	0	0%	0	2,034	2,034	0%
Fortunestown Lane/Carrigmore (2)	7,578	1.63%	8,270	1,357	9,627	5%
Access Road No.3 (Carrigmore)	0	0	0	1,357	1,357	0%

Based on the EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality (2017) indicative criteria for requiring an air quality assessment, as shown in Table 8-8-8 a DMRB assessment has been undertaken.

The DMRB Screening Method has been used to predict the change in pollutant concentrations due to traffic emissions at the selected sensitive receptors in the baseline year (2025) and in the year of opening 2032 without and with the Proposed Development. These predictions are based on the Annual Average Daily Traffic flow in proximity to the Proposed Development as shown in

Table 8-8-21.

For the DMRB Screening Assessment, the following assumptions have been made;

- For a busy junction, assume that traffic approaching the junction slows to an average of 20kph. These should allow for a junction, which potentially suffers from a lot of congestion and stopping traffic. In general, these speeds are relevant for approach distances of approximately 25m; and
- For other junctions (non-motorway) and roundabouts where some slowing of traffic occurs, assume that the speed is 10kph slower than the average free flowing speed.

[From Part IV of the Environment Act 1995 Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management Technical Guidance (TG22) March 2022]. Table 8-8-22 shows the speeds used in the DMRB assessment for the road links assessed.

Table 8-8-22: Speeds used in the DMRB assessment

Road Link	Traffic Speed (Kph)		
	Baseline 2025	Opening Year 2032 Do Nothing	Opening Year 2032 Do Something
Boherboy Road (5)	60 Kph	60 Kph	30 Kph
Access Road No.1	-	-	20 Kph
N81 (6)	80 Kph	80 Kph	80 Kph
Citywest Road (8)	50 Kph	50 Kph	50 Kph
Access Road No.2 (Corbally)	30 Kph	30 Kph	30 Kph
Fortunestown Road (2)	50 Kph	50 Kph	50 Kph
Access Road No.3 (Carrigmore)	30 Kph	30 Kph	30 Kph

The annual mean PM_{10} concentration of 10.4 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as a background concentration in the DMRB model to predict the PM_{10} concentration at the receptor locations during operation.

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The predicted NO_2 and PM_{10} concentrations at the receptor location in the base year 2025 are presented in Table 8-8-23.

Table 8-8-23: DMRB Screening Method predicted NOx and PM_{10} concentrations at the receptor location R1 in the baseline year 2025 (µg/m^3).

Location and Scenario	Annual Mean NOx (µg/m^3)	Annual Mean PM_{10} (µg/m^3)
@ R1 Base Year	2.66	10.65
@ R2 Base Year	1.30	10.53
@ R3 Base Year	0.17	10.42
@ R4 Base Year	0.06	10.41

As per LA105 Air Quality guidance, modelling of PM_{10} is only required for the base year to demonstrate that the air quality limit values in relation to PM_{10} are not breached. Where the air quality modelling indicates exceedances of the PM_{10} air quality limits in the base year then PM_{10} should be included in the air quality model in the do minimum and do something scenarios. Concentrations of PM_{10} were modelled for the baseline year of 2025. The modelling showed that concentrations were in compliance with the annual limit value of 20 µg/m^3 at all receptors assessed. Therefore, further modelling for the opening year is not required. The highest predicted concentration of 10.65 µg/m^3 is 53% of the annual limit value at the worst case receptor.

The predicted NOx concentrations at the receptor locations are presented in Table 8-8-24.

Table 8-8-24: DMRB Screening Method predicted NOx concentrations at the receptor location R1 in the Year of Opening 2032, Without and With Development (µg/m^3).

Location	DMRB Predicted Annual Mean NOx (µg/m^3) Without Development	DMRB Predicted Annual Mean NOx (µg/m^3) With Development
@ R1	1.31	1.42
@ R2	1.42	1.82
@ R3	0.18	1.10
@ R4	0.05	0.38

Using the NO_x to NO_2 calculator, the DMRB Screening Method predicted NO_x concentrations have been used to predict the NO_2 concentrations at the receptor locations R1-R4 at the façade of the Proposed Development. The annual mean NO_2 concentration of 12.1 µg/m^3 and the mean NO_x concentration of 25.2 µg/m^3 as recorded at the EPA monitoring station in Tallaght for 2024 has been used as the background concentration in the NO_x to NO_2 calculator.

The predicted NO_2 concentrations at the receptor locations in the Year of Opening are presented in Table 8-8-25.

Table 8-8-25: Predicted Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10}) concentrations at the receptor location R1 in the Year of Opening 2032, Without and With Development (µg/m^3).

Location	DMRB Predicted Annual Mean NO_2 (µg/m^3) (µg/m^3) Without Development	DMRB Predicted Annual Mean NO_2 (µg/m^3) (µg/m^3) With Development
@ R1	12.73	12.78
@ R2	12.78	12.98
@ R3	12.19	12.63
@ R4	12.12	12.28

The predicted NO_2 concentrations have been compared with the relevant Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) (See Table 8-8-1). The results of the DMRB Screening

Method and subsequent Air Quality Impact Assessment for NO_2 indicate that there will not be an exceedance of the relevant Air Quality Limit Values for NO_2 at the Proposed Development.

Table 8-8-26 summarises the description of magnitude of impact on NO_2 concentrations at the receptor locations in the year of opening, in accordance with the rationale for describing the impact of the proposal derived from the Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance (EPUK & IAQM) Land-Use Planning & Development Control: Planning for Air Quality (January 2017) as shown in Table 8-8-9.

In terms of annual mean NO_2 concentrations from road traffic emissions, as impact descriptors for individual receptors as outlined in Table 8-8-9., there will be a negligible impact. The long-term average concentration at receptors will be less than 75% of the relevant Air Quality Assessment Level (AQAL) and the percentage change in concentration will be <2% of the AQAL.

Table 8-8-26: Description of magnitude of impact in terms of NO_2 concentrations at the receptor locations in the year of opening 2032.

Location and Scenario	Absolute Change in Year of Opening	Relative Change in % of AQAL	Percentage predicted concentration relative to AQAL	Predicted Impact
NO_2 @ R1 – With Dev.	0.05	0.12%	31.95%	Negligible
NO_2 @ R2 – With Dev	0.20	0.50%	32.45%	Negligible
NO_2 @ R3 – With Dev	0.44	1.10%	31.58%	Negligible
NO_2 @ R4 – With Dev	0.16	0.40%	30.70%	Negligible

As outlined in *Section 7 Assessing Significance* of the EPUK & IAQM guidance document a judgment of significance should be made by a competent professional. The results of the DMRB Screening Method and subsequent Air Quality Impact Assessment indicate that there will be a negligible impact on air quality in the vicinity of the development due to associated traffic flows. Existing residents in the area and future development residents will not experience a significant air quality impact. A detailed atmospheric dispersion model of traffic emissions is not required based on the existing air quality and the future predicted air quality impact due to traffic flows in the area of the development.

The potential impact of the proposed development on ambient air quality in the operational stage is considered long-term, localised, negative and imperceptible and therefore, no mitigation is required.

8.5.3 Potential Cumulative Impacts

The future predicted traffic flows on the surrounding road network due to the Proposed Development include for the cumulative impact of other Proposed Developments in the surrounding area. Due to the relatively small additional traffic volume predicted to be generated due to the Proposed Development, including other proposed developments in the area, there will be a negligible change in air quality as predicted. Therefore, the cumulative operational air quality impact of any permitted developments and the Proposed Development

are predicted to cause an insignificant air quality impact during the operational phase in the short term and long term.

Potentially, the most significant cumulative impact may occur if the construction phase of various proposed projects overlap with other developments in the area. However, should the construction phase of the Proposed Development and other permitted developments coincide, it is predicted that once appropriate construction mitigations are put in place during construction, construction air quality and dust impacts will not be significant.

In relation to the in-combination construction and/or operational impact of the Proposed Development, with existing and approved projects in the area, the list of existing and approved projects supplied by DNV has been reviewed.

As per IAQM guidance it is recommended:

If applicable, hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

Therefore, a list of projects within 500m from the site were considered. Only 1 application is within 500m from the Proposed Development:

- Reference: SD24A/0092W, Proposal for development of a residential scheme of 73 no. units comprising a mix of 6 no. houses, 59 no. own-door duplexes and 8 no. apartments arranged in 4 blocks set around a central amenity space. located within the curtilage of protected structures on lands located adjacent to Drury Mills and Drury Park, Swiftbrook, Saggart, Co. Dublin, 0.24km from the Proposed Development. This development was granted permission in April 2025. An appeal as lodged in May 2025 (ABP-322539-25)

  If the construction period of this project is to overlap with the Proposed Development, there is a potential to impact on air quality in the area. This project could be considered a medium/high risk site, therefore regular liaison meetings should be held to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. This development is required to make suitable provision for dust minimisation during construction works, in accordance with its own planning conditions.

Should the construction phases of the Proposed Development and other permitted developments coincide, it is predicted that once appropriate construction mitigations are put in place during construction, construction air quality impacts will not be significant. Future projects of a large scale would need to conduct an EIAR to ensure that no significant construction and/or operational air quality impacts will occur as a result of those developments.

8.5.4 “Do Nothing” Impact

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased traffic volumes and associated air emissions will also not occur. The ambient air quality at the site will remain as per the existing baseline in Section 8.3 and will change in accordance with trends within the

surrounding area (including impacts from new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of air quality.

8.6 Avoidance, Remedial & Mitigation Measures

8.6.1 Construction Phase

Construction site dust control measures and good construction site management and practice is capable of effectively mitigating the potential for significant impact of fugitive dust emissions. Therefore, the potential for fugitive dust emission effects at the nearest sensitive receptors will be controlled to ensure impacts are of negligible significance.

The IAQM Guidance recommends that significance is only assigned to the effect after considering the construction activity with mitigation. Therefore, the detailed mitigation measures have been defined in a form suitable for implementation by way of a planning condition and will be included in a Construction Environmental Management Plan.

There are 18 sensitive residential properties <20m from the site boundary. Using the IAQM methodology for the assessment of air quality impacts from construction activities as shown in Table 8-8-16 has indicated that the risk of dust soiling for demolition is **negligible** and **high risk** for earthworks, construction and trackout. The impacts on human health are **negligible** for demolition and **low risk** for earthworks, construction and trackout. The ecological impacts are **negligible** for demolition and **low risk** for earthworks, construction and trackout.

In accordance with the IAQM Guidance, the highest risk category should be applied when determining proposed mitigation measures. Therefore, the mitigation measures applicable to a **high risk site** will be applied:

General Measures

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.

Dust Management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

  Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the

German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28 - 32 days.

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 logbook.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary if applicable, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- 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 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

The IAQM Guidance Mitigation Measures applicable to the specific works undertaken are as follows:

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 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 power 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 permits.
- Access gates to be located at least 10 m from receptors where possible.

8.6.2 Operational Phase

There is no requirement for mitigation measures relating to the operational phase. The development has been shown to be not significant in terms of air quality. Future proposed engine improvements and a transition to electric vehicles will result in continued improvement in urban air quality into the future.

In terms of space heating, the proposal is expected to utilise electric heating for both hot water and space heating. Therefore, there will be no pollutant emissions to atmosphere from traditional combustion sources, such as oil or gas boiler heating systems.

8.6.3 “Worst Case” Scenario

A worst case scenario has been assessed in terms of potential construction and operational air quality impacts.

8.7 Residual Impacts

When the dust minimisation measures detailed in the mitigation section of this Chapter are implemented, residual fugitive emissions of dust from the Site will be insignificant and pose no nuisance at nearby receptors. Therefore, the overall impact of the construction phase is considered short-term, negative, localised and not significant/imperceptible.

In relation to air quality during operational phase of the Proposed Development, compliance will be maintained with all relevant ambient air quality standards and guideline values and thus the impact of the development is not significant in the long term.

The results of the DMRB Air Quality Screening assessment indicate that the residual impacts of the Proposed Development on air quality are predicted to be imperceptible for all

parameters with respect to the operational phase local air quality assessment for the long and short term with a negligible impact with regard to all pollutants at receptors in the long term.

8.8 Monitoring

8.8.1 Construction Phase

Monitoring of air quality and dust related impacts will be required during the construction stage only of the Proposed Development. The monitoring activities are to:

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28 - 32 days.

8.8.2 Operational Phase

No operational monitoring is required.

8.9 Interactions

Reference has been made to the project description provided by the EIAR co-ordinator, project drawings provided by the project architects and traffic flow projections associated with the development provided by the traffic consultants.

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between human beings and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the Proposed Development will ensure that the impact of the Proposed Development complies with all ambient air quality legislative limits and therefore the predicted impact is long term and neutral with respect to human beings.

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 considered to be imperceptible.

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils and the water environment (hydrology) in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that interactions between air quality and land and soils and hydrology will be short-term and imperceptible.

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised and the effect on biodiversity will be short term, imperceptible and neutral.

No other significant interactions with air quality have been identified.

8.10 Difficulties Encountered When Compiling

There were no difficulties encountered when compiling this assessment.

8.11 Conclusion

When the dust minimisation measures detailed in the Section 8.6 are implemented, residual fugitive emissions of dust from the Proposed Development are predicted to be short-term, negative, localised and not significant/imperceptible.

The best practice dust mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be short-term, localised, negative and imperceptible with respect to human health.

Potential impacts to air quality during the operational phase of the proposed development are as a result of increased traffic volumes on the local road network. A screening assessment of NO_2 and PM_{10} emissions determined that impacts to air quality will be imperceptible as a result of changes in traffic in the local area. The operational phase of the proposed development will have an imperceptible, negative and long-term impact on air quality.

In conclusion, there are no significant impacts to air quality or climate predicted as a result of the proposed development once the mitigation measures outlined in this chapter are implemented.

8.12 References

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UK Highways Agency (2007) Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1 - HA207/07 (Document & Calculation Spreadsheet)

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Directives and Legislation

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Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management and daughter directives

Directive 2000/69/EC of the European Parliament and of the Council of 16 November 2000 relating to limit values for benzene and carbon monoxide in ambient air

Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants

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

Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending

Directive 2003/35/EC and repealing Directive 2001/81/EC

S.I. No. 180 of 2011 Air Quality Standards Regulations 2011

9 CLIMATE

9.1 Introduction

This chapter of the EIAR identifies, describes, and presents an assessment of the eventual significant direct and indirect effects of the Proposed Development at Boherboy, Saggart, County Dublin on climate (for example greenhouse gas (GHG) emissions) and its vulnerability to climate change.

It should be read in conjunction with Ch. 8 Air Quality, Ch. 13 Material Assets, Ch. 14 Traffic, as well as the Energy Analysis Report, Building Life Cycle Assessment Report and Site-Specific Flood Risk Assessment, Climate Change Impact Assessment submitted with the planning application.

A full description of the Proposed Development can be found in Chapter 2 of this EIAR.

Climate change is recognised as one of the most serious global environmental problems and arguably the greatest challenge facing humanity today. While natural variations in climate over time are normal, anthropogenic activities have interfered greatly with the global atmospheric system by emitting substantial amounts of greenhouse gases (GHGs). This has caused a discernible effect on our global climate system, with continued change expected due to current and predicted trends of GHG emissions. In Ireland this is demonstrated by rising sea levels, changes in the ecosystem, extreme weather events and biodiversity loss.

The GHG assessment evaluates the project's climate impact across different life stages, considering a 50-year building life expectancy. It categorises greenhouse gas emissions into four main stages based on BS EN 15978: Production (embodied carbon from raw material extraction to product manufacturing), Pre-construction/Construction (impacts from product delivery and assembly), Operational (emissions from building operations, maintenance, and replacement), and End of Life (deconstruction and disposal activities). The assessment includes the first three stages, while the End-of-Life stage is excluded due to uncertainties in deconstruction methods.

Attention will be focused on Ireland’s obligations under the Paris Agreement (Climate Action Plan & Corresponding carbon budgets) in the context of the overall climatic impact of the presence and absence of the Proposed Development.

9.1.1 Quality Assurance and Competency of Experts

This Chapter was prepared by Milo Reddaway, Environmental Consultant, Synergy Environmental T/A DNV. Milo has a Master of Science (Hons) degree and has worked as an Environmental Consultant with DNV since April 2025. Milo has built up experience preparing Climate Change Impact Assessments, Due Diligence Reports and chapters for EIARs.

9.2 Greenhouse Gas Emissions in Ireland

Ireland's latest GHG emissions 1990-2024 are based on the Sustainable Energy Authority Ireland's (SEAI's) provisional energy balance released in June 2025 (EPA, 2025). Total national greenhouse gas emissions in 2024 (excluding LULUCF) are estimated to be 53.75 million tonnes carbon dioxide equivalent (Mt CO2eq) which is 2.0% lower (or 1.09 Mt CO2eq) than emissions in 2023 (54.85 Mt CO2eq) and follows a 6.8% decrease in emissions reported for 2023. Emissions in 2024 are 3.6% lower than the historical 1990 baseline. National total emissions including Land Use Land Use Change and Forestry (LULUCF) decreased by 1.9% to 57.65 Mt CO2eq. ETS4 and ESR emissions decreased by 7.4% and 0.5% respectively (EPA, 2025).

Arresting growth in emissions is a challenge in the context of a growing economy but one which must continue to be addressed by households, business, farmers and communities if Ireland is to reap the benefits of a low-carbon economy.

The GHG emission inventory for 2024 is the fourth of ten years over which compliance with targets set in the European Union's Effort Sharing Regulation (EU 2018/842) will be assessed. This Regulation sets 2030 targets for emission reductions outside of the Emissions Trading Scheme (known as ESR emissions) and annual binding national limits for the period 2021-2030. Ireland's target is to reduce ESR emissions by 42% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. The ESR includes the sectors outside the scope of the EU Emissions Trading System (ETS) (such as Agriculture, Transport, Residential, Public Services and Commercial Services and Waste).

Ireland's ESR emissions annual limit for 2024 is 38.68 Mt CO2eq. Ireland's provisional 2024 GHG ESR emissions are 42.42 Mt CO2eq; this is 3.74 Mt CO2eq more than the annual limit for 2024, see Table 3 and Figure 6. This value is the national total emissions less emissions generated by stationary combustion, i.e., power plants, cement plant, and domestic aviation operations that are within the EU's emissions trading scheme. Cumulatively from 2021-2024 and after using the ETS flexibility, Ireland is not in compliance with the ESR by a net distance to target of -1.30 Mt CO2eq. In 2024, there is an exceedance of 1.83 Mt CO2eq above its Annual Emissions Allocation with the ETS flexibility. Agriculture and Transport accounted for 75.4% of total ESR emissions in 2024. The revised LULUCF Regulation (2023)10 incorporates new rules around LULUCF flexibilities for the period 2021-2025 and 2026-2030. There is a high degree of uncertainty relating to the availability of the LULUCF flexibility and, if available, the quantity of flexibility in each budgetary period (EPA, 2025).

The latest projections (May 2025) indicate that currently implemented measures (With Existing Measures) will achieve a reduction of 10% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the higher ambition (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.

In terms of the 2030 targets, the ESR provides two flexibilities (use of ETS allowances and credit from action undertaken in the land use, land use change and forestry (LULUCF) sector) to allow for a fair and cost-efficient achievement of the targets. New Regulations in 2023 mean there are new rules around LULUCF flexibility that incorporates split budgets 2021-2025 to 2026-2030[1]. Additional analyses are needed to estimate the impact of the new rules on

flexibilities. In the interim, based on latest LULUCF inventory and projections data, the maximum amount of LULUCF flexibility now projected to be available is 13.4 Mt CO_2eq in the first 5-year period (or 2.68 Mt CO_2eq per annum), with no flexibility available in the second 5-year period.

Ireland's GHG (GHG) emissions increased in the period from 1990 to 2001 where it peaked at 70.85 Mt CO_2 equivalent, before displaying a downward trend to 2014. Emissions increased by 4.0% and 3.8%, respectively in the years, 2015 and 2016 and remained relatively stable in 2017 and 2018, followed by a 3.0% decrease in 2019. In 2020 total national GHG emissions were 3.6% lower than 2019 emissions largely driven by the covid restrictions. The gradual lifting of covid restrictions in 2021 along with an increase in the use of coal and less renewables within electricity generation resulted in a 4.5% increase in emissions in 2021 compared to 2020. A 2.1% decrease in emissions was seen in 2022 compared to 2021, mainly due to a substantial decrease in residential sector emissions combined with decreases from industry, agriculture and electricity generation. This was followed by a 6.8% reduction in emissions in 2023 and 2% in 2024 on 2023 levels. Ireland's GHG emissions have decreased by 3.6% from 1990-2024.

In relation to the GHGs; carbon dioxide (CO_2) accounted for 61.1% of the total, with methane (CH_4) and nitrous oxide (N_2O) contributing 28.9% and 8.8% as CO_2 equivalent, respectively and F-gases contributing 1.2% of the total as CO_2 equivalent.

Agriculture is the largest contributor to the overall emissions at 38.0% of the total (excluding LULUCF). Transport and Energy Industries are the second and third largest contributors at 21.7% and 13.3%, respectively. Residential and Manufacturing Combustion emissions account for 10.4% and 7.7%, respectively. These five sectors accounted for 91.1% of national total emissions in 2024. The remainder is made up by the Industrial Processes sector at 3.5%, F-Gases at 1.1%, Commercial Services at 1.4%, Public Services at 1.3% and Waste at 1.6%.

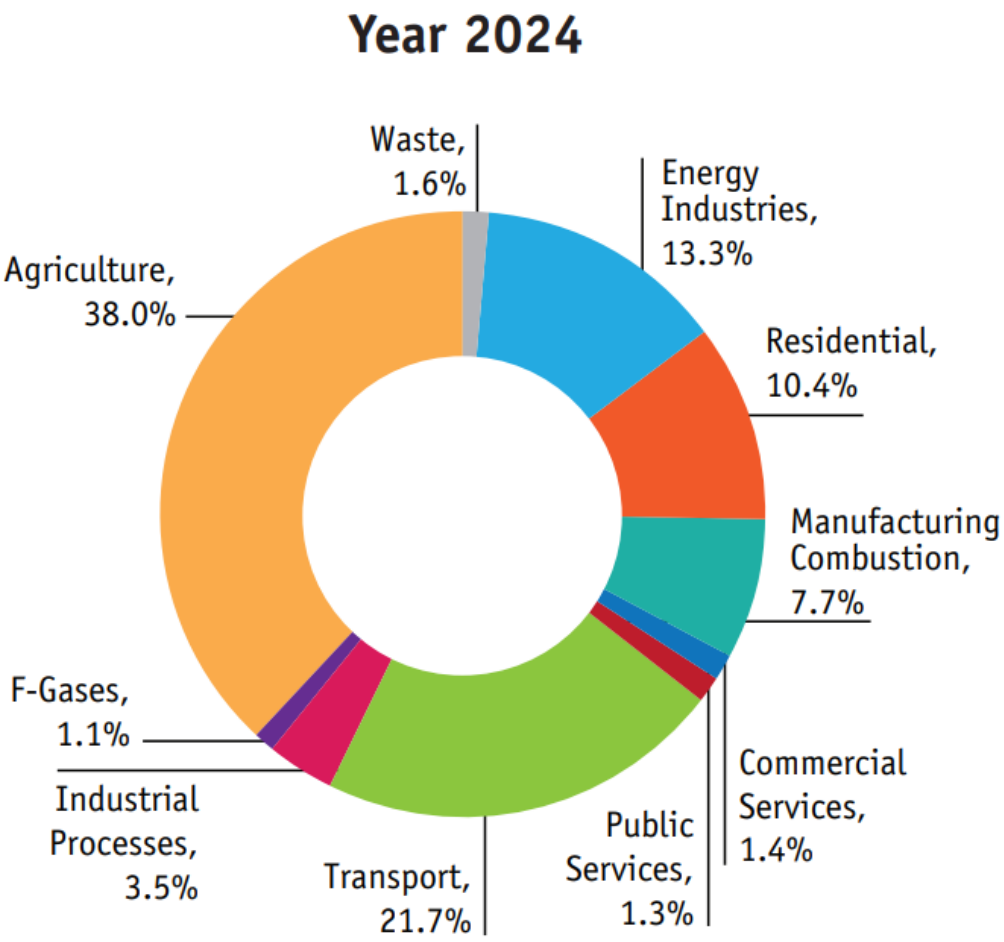


Figure 1 – Ireland's Greenhouse Gas Emissions Share by Sector 2024 (Source: EPA, 2025)

The Climate Change Advisory Council submitted its latest Annual Review 2025 in a series of sectoral reports between March and July 2025, with the final update published on August 8, 2025. Detailed key messages, including observations and recommendations for each sector (electricity; transport; built environment; enterprise and waste; agriculture, forestry, and other land use; and biodiversity), can be found at the beginning of each chapter in the annual review (CCAC, 2025).

The overall recommendations are as follows:

- Extreme Weather Preparedness: The Council urges the Government to establish a National Climate Damage Register to monitor and record the economic, social, and environmental impacts of extreme weather events. This is essential to improve Ireland's readiness for future climate shocks.
- Electricity Infrastructure Resilience: Following severe disruptions from Storms Darragh and Éowyn, the Council recommends urgent investment in grid modernization and resilience planning for critical services such as water, telecoms, and transport.
- Transport Sector Reform:
    - A full review of transport taxation (including vehicle registration tax, motor tax, excise duty, carbon tax, fuel pricing, and distance-based charges) is needed to align fiscal policy with climate goals.

    - Road space should be reallocated to support walking, cycling, and public transport.
    - Planning reform must ensure new developments reduce transport demand and accelerate delivery of sustainable infrastructure.
    - Local authorities need support to implement low-emission zones, shuttle services, and carpooling incentives.
    - School transport must be expanded to reduce car journeys, with continued investment in walking and cycling initiatives.
- Agriculture and Land Use: The Council supports scaling up agri-environmental schemes like ACRES and implementing the National Biomethane Strategy to produce 1 TWh of renewable gas by 2025. Continued reductions in fertiliser use and methane emissions are essential.
- Energy Security and Fossil Fuel Phase-Out: The Council expresses serious concerns about fossil-powered data centres and LNG terminals. It recommends:
    - Halting new fossil fuel infrastructure approvals
    - Ensuring new data centre demand is met entirely by renewables
    - Full depreciation of fossil fuel assets by 2050, especially in the gas network

9.3 Legislation, Policy and Guidance

The key legislation and guidance referenced in the preparation of the EIAR is outlined in Chapter 1: Introduction (Sections 1.4, 1.5 and 1.6). Specific to Climate, the following legislation, guidance, and planning framework relevant to the consideration of this factor has informed the assessment as outlined below.

9.3.1 International Legislation/Commitments/Agreements

In March 1994, the United Nations Framework Convention on Climate Change (UNFCCC) was established as an intergovernmental effort to tackle the challenges posed by climate change. The Convention membership is almost universal, with 197 countries having ratified. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices. This information is then utilised to launch national strategies and international agreements to address GHG emissions. Following the formation of the UNFCCC, two major international climate change agreements were adopted: The Kyoto Protocol, and the Paris Agreement.

In April 1994, Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently signed the Kyoto Protocol in 1997. The Kyoto Protocol is an international agreement linked to the UNFCCC which commits its parties to legally binding emission reduction targets. In order to ensure compliance with the protocol, the Intergovernmental Panel on Climate Change (IPCC) has outlined detailed guidelines on compiling National GHG Inventories. These are designed to estimate and report on national inventories of anthropogenic GHG emissions and removals. Under Article 4 of the Kyoto Protocol, Ireland agreed to limit the net anthropogenic growth of the six named GHGs to 13% above the 1990 level, spanning the period 2008 to 2012 (IPPC, 2006).

The second commitment period of the Kyoto Protocol was established by the Doha amendment which was adopted in extremis on the 8th of December 2012, to impose quantified emission limitation and reduction commitments (QELRCs) to Annex I (developed country) Parties during a commitment period from 2013 to 2020. 38 developed countries, inclusive of the EU and its 28 member states, are participating. Under the Doha amendment, participating countries have committed to an 18% reduction in emissions from 1990 levels. The EU has committed to reducing emissions in this period to 20% below 1990 levels. Ireland's QELRCs for the period 2013 to 2020 is 80% of its base year emissions. Ireland's compliance with the Doha amendment was assessed based on the GHG inventory submission in 2022 for 1990-2020 data. Ireland complied procedurally with its submission obligations under the Doha Amendment, by delivering a complete 1990–2020 inventory in 2022 and its submission has been considered acceptable. As of October 2020, the Doha Amendment has received the required number of ratifications to enter into force. Once in force, the emission reduction commitments of participating developed countries and economies in transition (EITs) become legally binding.

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030. The 17 SDGs are integrated—that is, they recognise that action in one area will affect outcomes in others, and that development must balance social, economic, and environmental sustainability. The creativity, knowhow, technology and financial resources from all of society is necessary to achieve the SDGs in every context. At its heart, the SDGs are about global partnership for this call to action. No matter how large or small, and regardless of their industry, all companies can contribute to the SDGs through their sustainability and corporate social responsibility strategies, policies, and processes.

Figure 2: UN Sustainable Development Goals (Source: THE 17 GOALS | Sustainable Development)

Ireland has published a Sustainable Development Goals National Implementation Plan 2022-2024 to provide a whole-of-government approach to implementing these goals. Sustainable development, climate change and equity are intrinsically intertwined. Climate change impacts can be linked in one way or another to all 17 of the UN Sustainable Development Goals (SDGs). Climate action that considers co-impacts across other SDGs can increase efficiency, reduce costs and support early and ambitious climate action (DECC, 2022). A new plan is in the initial stages of development and is expected to be published in the first half of 2026.

9.3.2 European Legislation

GHG Legislation

In December 2015, the Paris Climate Change Conference (COP21) took place and was an important milestone in terms of international climate change agreements. The Paris Agreement sets out a global action plan to put the world on track to mitigate dangerous climate change by setting a global warming limit not to exceed 2°C above pre-industrial levels, with efforts to limit this to 1.5°C. As a contribution to the objectives of the agreement, countries have submitted national climate action plans (nationally determined contributions, (NDCs)). Under this agreement, governments agreed to come together every 5 years to assess the collective progress towards the long-term goals and inform Parties in updating and enhancing their nationally determined contributions. Ireland will contribute to the Paris Agreement through the NDC tabled by the EU on behalf of Member States in 2020, which commits to a 55% reduction in EU-wide emissions by 2030 compared to 1990. This is considered to be the current NDC maintained by the EU and its Member States under Article 4 of the Paris Agreement.

The EU has set itself targets for reducing its GHG emissions progressively up to 2050, these are outlined in the 2020 climate and energy package and the 2030 climate and energy policy framework. These targets are defined to assist the EU in transitioning to a low-carbon economy, as detailed in the 2050 low carbon roadmap. The 2020 package is a set of binding legislation to ensure that the EU meets its climate and energy targets for the year 2020 (EEA; 2020). There are three key targets outlined in the package which were set by the EU in 2007 and enacted in legislation in 2009:

- 20% reduction in GHG emissions from 1990 levels;
- 20% of EU energy to be from renewable sources; and
- 20% improvement in energy efficiency.

The 2030 climate and energy framework builds on the 2020 climate energy package and was adopted by EU leaders in October 2014. The framework sets three key targets for the year 2030:

- At least 40% cuts in GHG emissions from 1990 levels;
- At least 32% share for renewable energy; and
- At least 32.5% improvement in energy efficiency.

The EU has acted in several areas in order to meet these targets, including the introduction of the Emissions Trading System (ETS). The ETS is the key tool used by the EU in cutting GHG emissions from large-scale facilities in the power, industrial, and aviation sectors. Around 45% of the EU's GHG emissions are covered by the ETS.

As part of the European Green Deal, the EU Commission proposed in September 2020 to raise the 2030 GHG emission reduction target, including emissions and removals, to at least 55% compared to 1990. The European Climate Law came into force in July 2021 and writes into 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 GHG emissions by at least 55% by 2030, compared to 1990 levels.

Corporate Sustainability Reporting Directive (CSRD)

On 5 January 2023, the Corporate Sustainability Reporting Directive (CSRD) entered into force. It modernises and strengthens the rules concerning the social and environmental information that companies must report. The CSRD is effective from 01 January 2024 for those entities already subject to the NFRD (reporting in 2025) and from 01 January 2025 for all other large companies (reporting in 2026).

Companies subject to the CSRD will have to report according to European Sustainability Reporting Standards (ESRS). The standards are developed in a draft form by the EFRAG, previously known as the European Financial Reporting Advisory Group (EFRAG, 2024). Specifically, the findings may serve as an evidence base for EFRAG Standard ESRS E1 CLIMATE CHANGE.

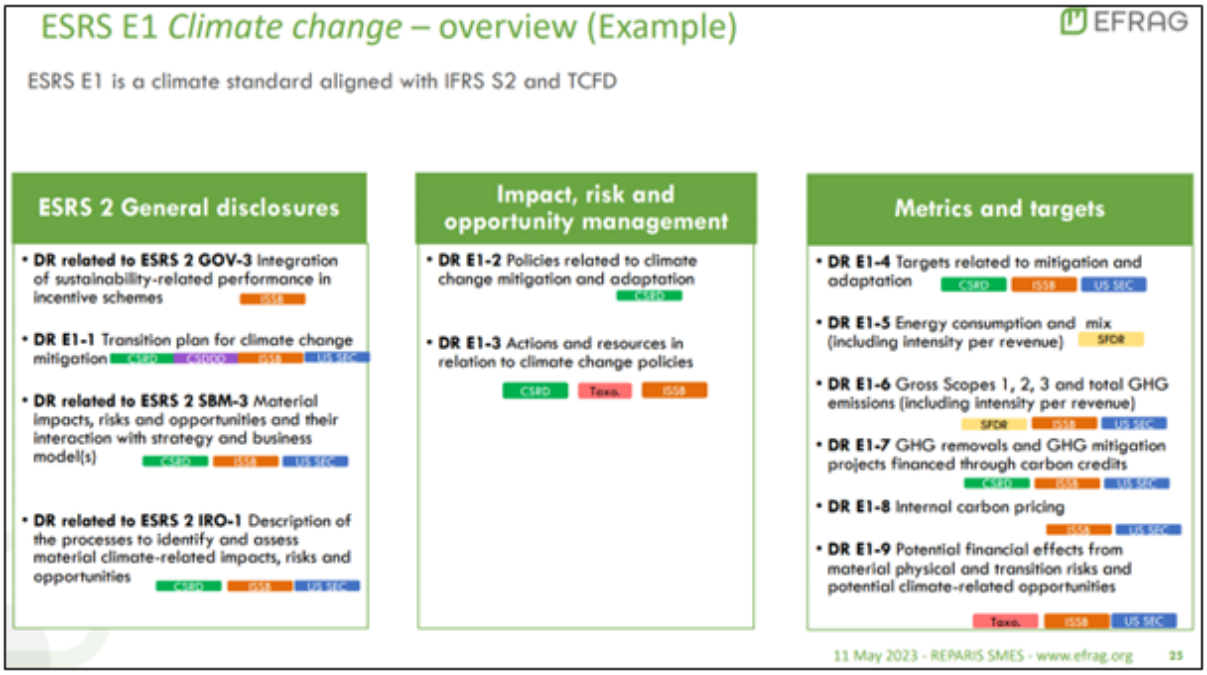


Figure 3: ESRS E1 Climate Change: presented by Eric Duvaud, EFRAG SR TEG member (Source: The first set of ESRS – the journey from PTF to delegated act (adopted on 31 July 2023) – EFRAG)

The data/information from this Climate Chapter should be considered for Impact, Risk and Opportunity Management Disclosure Requirements 20 and 21 below within ESRS E1 CLIMATE CHANGE (EFRAG; 2023):

20. The undertaking shall describe the process to identify and assess climate-related impacts, risks and opportunities. This description shall include its process in relation to:

(a) impacts on climate change, in particular, the undertaking's GHG emissions (as required by Disclosure Requirement ESRS E1-6);

(b) climate-related physical risks in own operations and along the upstream and downstream value chain, in particular:

i. the identification of climate-related hazards, considering at least high emission climate scenarios; and

ii. the assessment of how its assets and business activities may be exposed and are sensitive to these climate-related hazards, creating gross physical risks for the undertaking.

(c) climate-related transition risks and opportunities in own operations and along the upstream and downstream value chain, in particular:

i. the identification of climate-related transition events, considering at least a climate scenario in line with limiting global warming to 1.5°C with no or limited overshoot; and

ii. the assessment of how its assets and business activities may be exposed to these climate-related transition events, creating gross transition risks or opportunities for the undertaking.

21. When disclosing the information required under paragraphs 20 (b) and 20 (c) the undertaking shall explain how it has used climate-related scenario analysis, including a range of climate scenarios, to inform the identification and assessment of physical risks and transition risks and opportunities over the short-, medium- and long-term.

Corporate Sustainability Due Diligence Directive (CSDDD)

This proposed Directive establishes a corporate due diligence duty. The core elements of this duty are identifying, bringing to an end, preventing, mitigating and accounting for negative human rights and environmental impacts in the company's own operations, their subsidiaries and their value chains. In addition, certain large companies must have a plan to ensure that their business strategy is compatible with limiting global warming to 1.5 °C in line with the Paris Agreement.

The CSDDD is expected to complement the CSRD as it will require companies to implement comprehensive identification, prevention and mitigation processes to eliminate adverse human rights and environmental impacts in the company's own operations, its subsidiaries and value chains. It will also complement the Taxonomy Regulation that requires specific details of what constitute "environmentally sustainable" investments.

It is expected that the CSDDD will require companies in scope to ensure the identification, prevention, mitigation and ability to account for any adverse environmental impacts, with adequate governance, management systems and measures in place to this end.

For instance, regarding adverse climate change impacts, a company would have to obtain quantitative and qualitative information about baseline conditions at higher risk sites or facilities. Identification of adverse impacts would include assessing the environmental context in a dynamic way and at regular intervals, prior to a new activity or relationship; prior to major decisions or changes in the operation; in response to or anticipation of changes in the

operating environment; and periodically (at least every 12 months) throughout the life of an activity or relationship. The following Climate Change Impact Assessment can serve as due diligence demonstrating partial compliance with the CSDDD.

9.3.3 National Legislation

Climate Action and Low Carbon Development Act

The Climate Action and Low Carbon Development Act 2015 (the principal act) set national climate policy on a statutory footing for the first time in Ireland, with the target of pursuing the transition to a low-carbon, climate-resilient, and environmentally sustainable economy by 2050. The principal act was subsequently amended by the Climate Action and Low Carbon Development (Amendment) Act 2021 (the '2021 Act') which sets Ireland on a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade (Government of Ireland; 2015).

The 2021 Act provides a legally binding framework with clear targets and commitments set in law, and ensures the necessary structures and processes are embedded on a statutory basis to ensure Ireland achieves its national, EU and international climate goals and obligations in the near and long term. Policy amendments will involve the rapid electrification of transport system: electric bikes, electric vehicles, and electric public transport. This will be enacted in tandem with a ban on new registrations of petrol and diesel cars from 2030. Furthermore, there will be a policy to incentivise behavioural changes by increased effective modal shift to walking, cycling and public transport infrastructure.

The 2021 Climate Act incorporates carbon budgets and sectoral emissions limits, defining the carbon budget as the total allowable GHG emissions during the budget period. Consequently, the Act has removed any mention of a national mitigation plan, replacing it with references to both former and latest versions of the Climate Action Plan, as well as a series of National Long Term Climate Action Strategies. Additionally, it has updated the national transition objective to a national climate objective, committing "to pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy" (Government of Ireland; 2022).

Section 6B(12) of the 2021 Climate Act requires the Minister for the Climate, Energy and the Environment to publish the approved carbon budget programme. In May 2022 the budgets were published and the total emissions allowed under each budget is set out below, as well as the average annual reduction for each 5-year period (DECC, 2022):

• 2021-2025: 295 Mt CO2eq - this represents an average reduction in emissions of 4.8% per annum for the first budget period.

• 2026-2030: 200 Mt CO2eq - this represents an average reduction in emissions of 8.3% per annum for the second budget period.

• 2031-2035: 151 Mt CO2eq - this represents an average reduction in emissions of 3.5% per annum for the third provisional budget.

To meet these targets, the government published a set of Sectoral Emissions Ceilings in July 2022 and the Built Environment – Residential sector has a 20% reduction target on the 2018

baseline (7 Mt CO2eq) to achieve a ceiling of 5 Mt CO2eq by 2025 and 6 Mt CO2eq by 2030 (DECC, 2022).

The assessment in this chapter has been prepared in accordance with, among other things, the 2021 Act and the EIA Directive.

The 2021 Act also introduces a requirement for each local authority to prepare a Climate Action Plan, which will include both mitigation and adaptation measures and be updated every five years. Local authority Development Plans will also align with their Climate Action Plan (DECC, 2021).

The proposed project is consistent with the following plans, strategies and objectives specified in section 15 of the Climate Action and Low Carbon Development Act 2015, as amended:

- The National Climate Objective;
- The most recent Climate Action Plan;
- The most recent National Long-Term Climate Action Strategy;
- The most recent National Adaptation Framework; and
- The objective of mitigating GHG emissions and adapting to the effects of climate change in the State.

The Act mandates the relevant Minister to develop the Climate Action Plan, the National Long-Term Climate Action Strategy, and the National Adaptation Framework to achieve the National Climate Objective (DECC, 2021). This objective of becoming 'climate neutral' by 2050 aligns with the EU's climate goal as established in Regulation (EU) No 2021/1119 (the 'European Climate Law'). The European Climate Law enshrines into EU legislation the target set by the European Green Deal for the EU to attain climate neutrality, or 'net zero' GHG emissions, by 2050.

The Climate Action Plan 2025 (CAP25) is the fourth annual update to Ireland’s Climate Action 2019 (the plans are to be updated annually to ensure alignment with Ireland’s legally binding economy-wide carbon budgets and sectoral ceilings) (DECC; 2023). This plan is the third to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction, in 2022, of economy-wide carbon budgets and sectoral emissions ceilings. The plan had a delayed launch on April 15th, 2025.

The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. Climate Action Plan 2025 builds on Climate Action Plan 2024, outlining how Ireland will accelerate the actions required to respond to the climate crisis, putting climate solutions at the centre of Ireland’s social and economic development (DECC; 2025). Climate Action Plan 2025 is a streamlined Climate Action Plan, to be read in conjunction with Climate Action Plan 2024. It is also the final Climate Action Plan of the first 5-year Carbon Budget – marking an important midpoint in what has been called the decade of climate action.

The supplementary Annex of Actions, approved by the Irish Government, provides the specific actions required to implement the targets set out in the Plan, and includes information regarding outputs, lead departments, timelines and stakeholders. For 2025 a a similar approach to the 2024 Annex has been implemented that will see only new, high-impact actions

included in the Annex, while the full roadmap of actions to support the delivery of our climate targets remains within the Climate Action Plan itself (DECC; 2025).

9.3.4 National Policy

National Adaptation Framework (NAF)

Ireland's second statutory National Adaptation Framework (NAF) was published on 5 June 2024 by Minister Eamon Ryan TD, replacing the original 2018 framework following its mandated five-year review under the Climate Action and Low Carbon Development Act 2015 1 2 3. The updated NAF continues to set out the national strategy to reduce the country's vulnerability to climate change impacts and to avail of potential benefits, while integrating lessons learned from recent extreme weather events and evolving climate science.

The 2025 NAF builds on the foundational work of the National Climate Change Adaptation Framework (NCCAF, 2012) and the first NAF (2018), but introduces several new principles and priorities:

- Avoiding maladaptation
- Nature-based Solutions
- Just Resilience (an evolution of the "just transition" concept)
- Greater consideration of socio-economic vulnerability
- Improved cross-sectoral cooperation

The framework maintains its whole-of-government and society approach, emphasizing collaboration with civil society, the private sector, and the research community. It also strengthens the enabling environment for adaptation through updated sectoral planning guidelines and local authority strategies.

Under the 2025 NAF all government departments must prepare or update Sectoral Adaptation Plans for priority areas, including two newly added sectors: Tourism and Built Environment/Planning. Local authorities continue to develop Local Adaptation Strategies, supported by new guidance documents such as the Heritage and Climate Adaptation Guidance for Local Authorities.

In terms of integration with broader climate policy the NAF is closely aligned with CAP25, approved in April 2025, which refines Ireland's roadmap to halve emissions by 2030 and reach net zero by 2050. CAP25 includes a focused Annex of Actions for 2025 and cross-cutting measures in energy, buildings, transport, enterprise, land use, and adaptation.

The National Climate Change Risk Assessment (NCCRA)

The National Climate Change Risk Assessment (NCCRA) was published in May 2024 (EPA, 2024). The NCCRA was required to be developed under Action 457 from the 2021 CAP (Government of Ireland 2021). Action 457 seeks to

"Further develop Ireland's national climate change risk assessment capacity to identify the priority physical risks of climate change to Ireland".

The NCCRA uses definitions of the risk determinants from the Intergovernmental Panel on Climate Change (IPCC) Risk Framework (IPCC 2023):

- 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.
- 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.

When considering risk, the NCCRA assesses exposure and vulnerability for two future climate change scenarios or Representative Concentration Pathways (RCPs):

- RCP4.5 was selected as it represents a scenario aligned with the global temperature trajectory.
- RCP8.5 was selected as it represents a high-emissions scenario and achieves the highest level of modelled temperature increases by the end of the century. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

These scenarios align with a conservative approach to the assessment of risks to Ireland and assume that global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (DECC 2024). In addition to the future climate scenarios, the NCCRA assesses the risk from the future climate during the following timeframes:

- Present (~2030);
- Medium term (~2050); and
- Long term (~2100).

Just Transition

The 2021 Climate Action Plan sets out a just transition framework consisting of four principles to underpin both processes and implementation of all climate action policies and measures. Provisions under the 2021 CAP have been carried over to CAP25 without substantive changes. The present report primarily examines the impact of climate change (Government; 2021). However, we recommend that due consideration be given to the concept of a "just transition," aligning with the Irish Government's framework, to ensure a comprehensive approach to addressing the climate crisis that extends beyond mere climate action.

The just transition framework is made up of four principles (DECC; 2021):

- An integrated, structured, and evidence-based approach to identify and plan our response to just transition requirements.
- People are equipped with the right skills to be able to participate in and benefit from the future net zero economy.
- The costs are shared so that the impact is equitable and existing inequalities are not exacerbated.
- Social dialogue to ensure impacted citizens and communities are empowered and are core to the transition process.

Regional Policy

Action 8 of Ireland's second statutory National Adaptation Framework (NAF), published on 5 June 2024, reaffirms the establishment of four Climate Action Regional Offices (CAROs) to support climate adaptation at the local level 1 2. The Eastern & Midlands CARO remains one of these offices, with a continued mandate to assist local authorities in its region in preparing and implementing Local Authority Climate Action Plans (LACAPs).

Under the updated NAF and the Climate Action Plan 2025 (CAP25), CAROs play a critical role in:

- Capacity building within local government
- Mainstreaming adaptation into planning and development
- Facilitating cross-sectoral collaboration
- Supporting alignment with national climate objectives and sectoral adaptation plans

The Dublin Metropolitan CARO specifically supports councils such as Dublin City, Fingal, South Dublin, and Dún Laoghaire-Rathdown, ensuring that their climate action plans reflect the latest national strategies and regional vulnerabilities.

This updated framework emphasises Just Resilience, nature-based solutions, and community empowerment, aligning with the broader just transition principles carried forward from CAP21 into CAP25.

9.3.5 South Dublin County Council Climate Action Plan 2024-2029

In February 2024, South Dublin County Council (SDCC) adopted the South Dublin Council Climate Action Plan 2024-2029 (SDCCAP). The Action Plan is the climate adaptation and mitigation strategy for the County, and sets out to achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral County. Aligned to the Government's National Climate Objective (as set out in the national Climate Action Plan 2025), the new Plan outlines mitigation and adaptation climate action measures across the following six thematic areas:

- Governance and Leadership
- Energy and Built Environment
- Communities Resiliency and Transition
- Environment and Biodiversity
- Transport and Mobility
- Sustainability and Resource Management

The actions in these themes collectively address the main goals and targets of this plan:

1. 50% improvement in South Dublin CC's energy efficiency by 2030
2. 51% reduction in South Dublin CC's GHG emissions by 2030
3. To make Dublin a climate resilient region for all, by reducing the impacts of future climate change-related events;
4. Empower the local community to engage with climate action through education, support, and ongoing collaboration and;
5. Enable socio-economic growth, placemaking and community development aligned to decarbonisation and a just transition.

The Plan sets out how South Dublin CC will be responsible for enhancing climate resilience, increasing energy efficiency and reducing GHG emissions across its own assets, services and infrastructure to which it is fully accountable for.

In the development of the CAP, South Dublin CC has reviewed the risks posed by climate change for the County and the implications of these risks for the delivery of services by South Dublin CC. This has been achieved through a Climate Change Risk Assessment (CCRA) which identifies the likelihood of future climate hazards and their potential impacts. The CCRA has been undertaken, in accordance with 'Technical Annex B: Climate Change Risk Assessment' of the 'Local Authorities Climate Action Planning Guidelines'.

A qualitative CCRA supports the identification and prioritisation of potential future climate risks for more detailed analysis and provides a broad understanding of where adaptation actions could be required. The approach comprises of two phases, where both current and future risks and impacts are assessed.

9.3.6 South Dublin County Development Plan (SDCDP) 2022-2028

The new SDCDP sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the County over the plan period from 2022 to 2028.

The Climate Change, Energy and Renewable Resource chapter of the plan (Chapter 14) sets out detailed policy objectives in relation to climate action and the role of planning in climate change mitigation, climate change adaptation, and the transition towards a more climate resilient County. The Chapter addresses four key issues, namely:

- Energy Efficiency in Buildings;
- Renewable Energy;
- Decarbonising Motorised Transport;
- Agriculture, Land Management, Forestry, and Urban Greening.

These issues have been identified as being of particular significance in helping to achieve sustainable planning outcomes which will ultimately help to deliver a low carbon and a climate resilient County. Planning already plays a role in each of the key areas identified in the SDCCAP. Having regard to the headings set out in the SDCCAP, the Development Plan contains a range of policy objectives which aim to mitigate and adapt to climate change.

The creation of a climate resilient County is an overarching strategic outcome of the SDCDP, and as such, the theme permeates the entire plan with a selection of policy objectives in multiple Chapters all contributing to aid in the transition of the County to a climate resilient low carbon society. Relevant policy objectives and their incorporation into the Proposed Development design have been considered in Section 6 of this report.

The SDCC Climate Action Plan 2024-2029 aims to create a cleaner, greener, and more resilient county. The Climate Action Plan has 123 specific actions that have either been delivered, are in development stage or drafted for the future implementation. For instance, SDCC launched the Deposit Return Scheme for plastic bottles in February 2024. SDCC are also assisted by the Office of Public Works on flood alleviation schemes.

9.3.7 Guidance

The assessment has referred to national guidelines, where available, in addition to international standards and guidelines relating to the assessment of GHG emissions and associated climatic impact. These are summarised below:

- 2030 Climate and Energy Policy Framework (European Commission, 2014)
- 2030 EU Climate Target Plan (European Commission, 2021b)
- Assessing GHG Emissions and Evaluating their Significance the Institute of Sustainability & Environmental Professionals (ISEP formerly known as IEMA), 2022)
- Carbon Management in Infrastructure (European Commission, 2013)
- Climate Action and Low Carbon Development Act 2015 (as amended).
- Climate Action Plan 2025 (Government of Ireland, 2025)
- Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate (UK Highways Agency, 2019)
- Department of Housing, Planning, and Local Government. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018)
- European Commission. Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013)
- European Commission. Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (2021a)
- IEMA. EIA Guide to: Climate Change Resilience and Adaptation (2020a)
- IEMA. GHG Management Hierarchy (2020b)
- IEMA. Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (2022)
- Irish Green Building Council, Land Development Agency (LDA), and Environmental Protection Agency (EPA). The Carbon Designer for Ireland Tool
- Publicly Available Specification (PAS) 2080: 2016
- Transport Infrastructure Ireland (TII). GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (2022c)
- Transport Infrastructure Ireland (TII). GE-GEN-01101: Guide to the Implementation of Sustainability for TII Projects (2023)
- Transport Infrastructure Ireland (TII). PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (2022a)
- Transport Infrastructure Ireland (TII). PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (2022b)
- Integrating Climate Change into Strategic Environmental Assessment in Ireland – A Guidance Note (EPA, 2015)

9.4 Study Methodology

Carbon dioxide (CO2) emissions have a global climate warming effect. This is regardless of rate of release, location or the weather when released into the atmosphere. This is unlike pollutants that affect local air quality where the rate of release, location and prevailing weather, as well as the amount of pollutant, determines the local concentrations and the impact.

Local ambient concentrations of CO2 are not relevant for climate change and there are no limits or thresholds that can be applied to particular sources of carbon emissions. Any amount of CO2 released into the atmosphere will contribute to climate warming, the extent of which is determined by the magnitude of the release. Although CO2 emissions are typically expressed as kilogrammes or tonnes per year, there is a cumulative effect of these emissions because CO2 emissions have a warming effect which lasts for 100 years or more.

In this regard, the methodology adopted in this chapter covers two separate assessments – a GHG assessment (GHGA) and a climate change risk assessment (CCRA).

- GHG Emissions Assessment (GHGA) – This evaluation estimates the GHG emissions generated by a project throughout its entire lifespan. It then compares these emissions against pertinent Irish carbon budgets, targets, and policies to help gauge their significance.; The Transport Infrastructure Ireland (TII) Carbon assessment tool and the One Click LCA tool.
- Climate Change Risk Assessment (CCRA) – This analysis examines how a changing climate could affect a project and its surrounding environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

Further details on the methodologies undertaken are presented in the following paragraphs.

9.5 Study Area

Effects arising from the potential impacts on climate are considered to impact on a national to EU to global level and the study area for climate is the State for both the construction and operation phases. The proposed Project has been outlined in Chapter 2.

9.6 Survey Methodology

9.6.1 Desk Surveys

A desktop study involving various national and international documents on climate change and analysis of synoptic meteorological data from the nearest Met Eireann station (Casement) was also carried out in order to compile this report. Attention has been focused on Ireland's obligations under the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

This analysis was undertaken by means of a desktop assessment based on available relevant guidance and information sources, and with reference to other chapters of this EIAR.

The following information sources have been consulted in relation to the assessment of climate aspects for the proposed Project:

- Key material, resource and cut/fill balance inputs from the description of the proposed Project presented in Project Description and Construction Strategy of this EIAR;
- Traffic figures from Traffic and Transportation;
- GHG assessment for pre-construction, construction and operational life stages;
- Building Lifecycle and Energy Report findings;
- Site Specific Flood Risk Assessment
- Estimates of likely waste volumes from the description of the proposed Project presented in Project Description, Construction Strategy, Land and Soils and Resource and Waste Management of this EIAR; and
- Environmental Protection Agency (EPA) GHG Emissions Inventories and Projections.

9.6.2 Climatics

Summary of the Approach

This DNV assessment was primarily based on the on-site climate risk projections generated CMIP5/CMIP6 climate model. The tool is typically used in combination with multiple Shared Socio-economic pathways/ Representative Concentration Pathways (SSPs/RCPs), which represent different future GHG concentration trajectories developed by the International Panel on Climate Change. The assessment was undertaken for two representative scenarios SSP1-2.6/RCP 4.5 and SSP5-8.5/RCP 8.5:

- SSP1-2.6/RCP 4.5 (transition from 2030) – this scenario leads to global warming exceeding 2 °C by 2100 but remaining below 3 °C. It is described as an intermediate scenario; and
- SSP5-8.5/RCP 8.5 (business as usual) – this scenario leads to global warming significantly exceeding 3 °C by 2100 and is generally taken as the basis for the worst-case climate change scenarios.

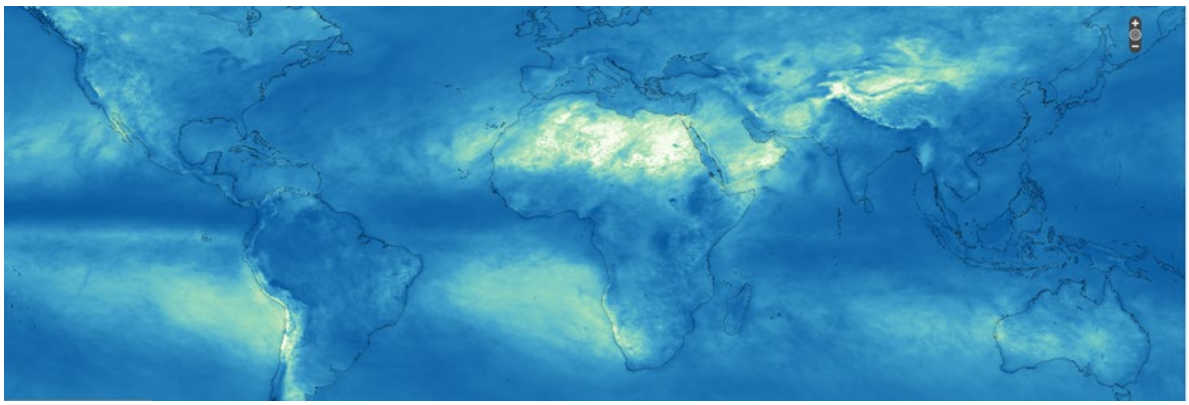


Figure 9-4 Multi-model Ensembled Rainfall Projection for 2050 (SSP5-8.5)

We combine the global data from multiple IPCC models (ACCESS, GFDL-ESM4, HadGEM) to address the model uncertainty. Figure 4 showcases the multi-model ensembled of rainfall projection for 2050 under SSP5-8.5 scenario. Through DNV's proprietary method, we downscale and refine the global data to a 5km grid resolution for various regions like Australia, Contiguous United States (CONUS), Europe, and the United Kingdom. Leveraging these refined datasets, we can assess multi-hazard risk exposure for assets and portfolios across different geographical areas.

Table 9.5: Assessment of climate risk indices

Category	Hazard
Temperature related indices	Surface temperature
	Warm Days
	Fire Weather Days
	Heat Stress Index
Rainfall related extremes	Precipitation
	Heavy Precipitation Days
	Extreme Precipitation Days
	Flood Events
Aridity/Drought conditions	Water stress
Irradiance at surface	Surface reading solar radiation
Cloud related	Cloud cover
Wind extremes	Wind speed
	Storm wind speed
Subsidence and landslide	Subsidence susceptibility index
	Landslide
Hailstorm	Hailstorm frequency
Lightning	Lightning density

9.6.3 Field Surveys

No site-specific baseline surveys were undertaken as part of the assessment for climate. The baseline data presented in this section is derived from the EPA Projections and Met Éireann monitoring network and may be taken as representative of the background climate within the Study Area.

9.6.4 Assessment Methodology

9.6.4.1 Key Parameters for Assessment

This assessment has been undertaken in line with the Institute of Sustainability & Environmental Professionals (ISEP formerly known as IEMA) guide 'Assessing GHG Emissions and Evaluating their Significance', 2nd Edition, 2022. The following aspects of the proposed Project are assessed in this chapter:

- Potential direct GHG (GHG) emissions associated with the construction of the proposed Project – this includes site clearance, embodied carbon, material transport, construction activities and waste management;
- Potential changes in GHG emissions associated with emissions during the operational phase of the proposed Project; and
- Vulnerability of both the construction and operational phases of the proposed Project to climate change.

9.6.4.2 GHG Appraisal Method -Construction Phase

(Including Material Delivery and Spoil Removal)

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 building life expectancy for the purposes of the assessment is 50 years, typical for this type of development. GHG emissions are attributed to four main categories, taken from BS EN 15978. These categories are:

- Production Stage (Embodied carbon); The carbon emissions at this stage originate from the extraction of raw materials, their transportation to manufacturing sites, and the primary energy consumed (along with the associated carbon impacts) during the conversion of these raw materials into construction products. These phases have been included in the scope of this assessment, and relevant information has been integrated into the TII tool (TII, 2022).
- Pre-construction/Construction Stage; These carbon impacts stem from the delivery of construction products to the site and their subsequent processing and assembly into the building. This aspect has been incorporated into the assessment's scope.
- Operational Stage: This encompasses a broad range of sources, including GHG emissions from building operations (energy), maintenance, and replacement which have been included in this assessment.
- End of Life Stage: The sustainable deconstruction and disposal of the existing building at the end of its life (Approx 50 years) consider the activities carried out by demolition contractors on-site. However, no credit is given for potential future carbon benefits from reusing or recycling materials into new products. This stage is not included in the scope of this study due to the variability and uncertainty surrounding deconstruction methods that may be employed at the end of the development’s lifespan.

Information and data from the building lifecycle report, building energy ratings and energy statement have been utilised for this chapter.

Nearly Zero Energy Buildings’ (NZEB) means a building that has a very high energy performance. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. Since 2020, all new buildings in the EU are required to be ‘nearly-zero energy buildings’. This will be replaced by a further enhanced ‘zero-emission buildings’ requirement, starting from 2028 for new buildings owned by public bodies and 2030 for all other new buildings.

The Dwelling Energy Assessment Procedure (DEAP) is used by BER assessors to calculate the energy performance and carbon dioxide emissions of a home's space heating, water heating, ventilation and lighting. DEAP consists of a software tool and guidance manuals. BER Assessors use DEAP to publish Building Energy Rating (BER) certificates and advisory reports for homes. DEAP is also the compliance tool specified in Part L of the Irish Building Regulations.

The DEAP software is web-based and used to calculate the annual delivered energy consumption, primary energy consumption (kWh/m2/year) and carbon dioxide emissions (kgCO2/m2/y) for standardised occupancy. For all new builds, NZEB is equivalent to a 25% improvement in energy performance on the 2011 Building Regulations. Key changes to Part L for NZEB compliance include a Maximum Energy Performance Coefficient of 0.3, a Maximum Carbon Performance of 0.35 and a renewable Energy Ratio of 20%.

For the building elements of the proposed development, the One Click LCA 3D Designer tool was utilised. One Click LCA is certified to EN 15978, EN 15978, ISO 21931 – 1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at 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 One Click 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

Transport Infrastructure Ireland's (TII) proprietary carbon tool has been used to quantify carbon emissions from non-building elements such as material delivery, spoil removal, roads, and infrastructure. The carbon tool is a spreadsheet-based product, developed by TII, with the goal of identifying, estimating and mitigating GHG emissions that accrue on large road and rail infrastructure projects. The carbon tool is closely aligned with guidance set out in PAS 20803 which suggests a modular structure for capturing and reporting carbon emissions according to lifecycle phase. Where the exact material needed isn't listed an estimate to a similar material type has been used. The construction waste and construction traffic information were reviewed from the traffic and waste chapters.

Design data for materials, earthworks and transport distances are based on input data from the design team. Where detailed designs are not available for various parts of the project, assumptions are made based on industry best practice and default values in the carbon tool. In particular, transport distances for materials have been estimated, as no specific suppliers have been selected at this early stage of the proposed Project. This allows for an estimate of transport emissions, using an emissions factor for kg CO2eq/km in the carbon tool.

The use of the TII Carbon Tool was not considered suitable for the building elements of the Proposed Development. As the TII Carbon Tool was developed for road and infrastructure projects, the material types within the tool are specific to these types of developments. These material types are not fully appropriate for assessing the embodied carbon associated with the construction of buildings. Therefore, the carbon impact of the buildings was carried out using an alternative tool; the Carbon Designer for Ireland tool. One Click LCA 3D Designer tool in combination with BER/NEAP assessments have been used for the building and operational carbon assessment.

In addition to the measures outlined above, the GHG assessment has explicitly had regard to the Housing Agency's statutory report "Embodied Carbon and the Climate Impact of our Housing" (August 2025). This report highlights that embodied carbon—emissions arising from the extraction, manufacture, transport, and assembly of construction materials—can account for a substantial proportion of a dwelling's whole-life carbon footprint, particularly as operational emissions decline under NZEB standards. The report recommends early-stage

design interventions, material efficiency, and circular economy principles as critical strategies for reducing embodied carbon. In line with these recommendations, the Proposed Development has incorporated whole lifecycle carbon assessment using the IGBC INDICATE Workbook, developed in alignment with SEAI's Life Cycle GWP Calculation Methodology, prioritised low-carbon material choices, and embedded reuse and recycling measures within the Construction Waste Management Plan as outlined in the preceding sections.

9.6.4.3 GHG Appraisal Method - Operational Phase

Traffic Emissions

As per the EU guidance document Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013) the climate baseline is first established by reference to EPA data on annual GHG emissions (see Section 9.7 below). Thereafter the impact of the Proposed Development on climate is determined. Emissions from road traffic associated with the Proposed Development have the potential to emit carbon dioxide (CO2) which will impact climate.

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact assessments LA 114 Climate (UK Highways Agency, 2019). The following scoping criteria are used to determine whether a detailed climate assessment is required for a proposed project during the operational stage. During the operational phase, if any of the road links impacted by the Proposed Development meet the below criteria then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

None of the road links impacts by the Proposed Development satisfy the above criteria and a quantitative assessment of the impact of traffic emissions on climate is not necessary as there is no potential for significant impacts to climate.

Operational GHG Emissions

The EU guidance (2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. In addition to the EU guidance, the ISEP guidance note on 'Assessing GHG Emissions and Evaluating their Significance' (ISEP, 2022) states that "the crux of significance regarding impact on climate 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". Mitigation has taken a leading role within the guidance compared to the previous edition published in 2017. Early stakeholder engagement is key and therefore mitigation should be considered from the outset of the project and continue throughout the project's lifetime in order to maximise GHG emissions savings.

The Energy and Climate Action Statement prepared by BBSC, building lifecycle report and the One Click LCA Workbook results in relation to this assessment has been reviewed and used to inform the operational phase climate assessment. This report outlines several measures in relation to energy usage from the Proposed Development primarily in relation to

heat and electricity. Several measures have been incorporated into the overall design of the development to reduce the impact to climate where possible, in line with the objectives of the ISEP guidance (2022).

9.6.4.4 Assessment Criteria for GHG Emissions

After the publication of the 2021 Climate Amendment Act in July 2021 and the 2021 CAP, the carbon budgets were approved and a series of sectoral emissions ceiling were published, including sectoral emissions ceilings for the Residential sector which remain the same under CAP25 (DECC, 2021). These ceilings will allow a comparison with the net CO2 projected GHG emissions from the Project.

The IEMA Climate Change principles (ISEP, 2020) document provides a section on how to assess GHG emissions in EIA and states:

- "When evaluating significance, all new GHG emissions contribute to a significant negative environmental effect; however, some projects will replace existing development that have higher GHG profiles. The significance of a project's emissions should therefore be based on its net impact, which may be positive or negative.
- "Where GHG emissions cannot be avoided, the EIA should aim to reduce the residual significance of a project's emissions at all stages."
- "Where GHG emissions remain significant but cannot be farther reduced… approaches to compensate the project's remaining emissions should be considered."

The process for determining the significance of effects involves two key steps: first, defining the magnitude of the impacts, and second, evaluating the sensitivity of the receptors (e.g., Ireland's National GHG targets). Although there are no specific project criteria for climate assessment, the project will be evaluated using the recommended ISEP significance determination approach. This evaluation will account for any embedded or planned mitigation measures included in the project design (ISEP, 2020).

According to LA 114, professional judgment is essential when contextualizing and assessing the significance of a project's GHG impact. In alignment with ISEP Guidance, LA 114 emphasises that the core of assessing significance is not just whether a project emits GHGs or the magnitude of these emissions alone, but rather whether the project helps reduce GHG emissions compared to a baseline that aligns with a net zero trajectory by 2050 (UK Highways Agency, 2019) .

Significance determination for emissions generated by the project in this assessment is based on the criteria presented in Section 9.1 as guided by ISEP in addition to the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 9.1: Definition of Climate Significance

Magnitude of Impact	Description

Major or Moderate Adverse (i.e. significant)	A project that follows a 'business-as-usual' or 'do minimum' approach and is not compatible with the net zero trajectory by 2050 or sectoral based transition to next zero targets, results in a significant adverse effect. It is down to the consultant completing the assessment to differentiate between the 'level' of significant adverse effects, e.g. 'moderate' or 'major' adverse effects. A project's impact can shift from significant adverse to non-significant effects by incorporating mitigation measures that substantially improve on business-as-usual and meet or exceed the science-based emissions trajectory of ongoing but declining emissions towards net zero. Meeting the minimum standards set through existing policy or regulation cannot necessarily be taken as evidence of avoiding a significant adverse effect. This is particularly true where policy lags behind the necessary levels of GHG emission reductions for a science based 1.5°C compatible trajectory towards net zero.
Minor Adverse (i.e. not significant)	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 an impact that has a minor adverse effect but 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.
Negligible	A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory, and has minimal residual emissions, is assessed as having a negligible effect that is not significant.
Beneficial	A project that achieves emissions mitigation that goes substantially beyond the reduction trajectory, or substantially beyond existing and emerging policy compatible with that trajectory, and has minimal residual emissions, is assessed as having a negligible effect that is not significant.

Ireland's carbon budgets provide a framework for understanding the significance of GHG emissions from the Proposed Development. This involves comparing the anticipated net GHG emissions of the development with the established carbon budgets. With the introduction of the Climate Action Act in 2021 and the Climate Action Plan 2025, sector-specific carbon budgets have been outlined for comparison with the development's net GHG emissions over its lifecycle. For the Transport sector, which emitted approximately 12 MtCO2e in 2018, the budget has a 2030 cap of 6 MtCO2e, reflecting a 50% reduction. Similarly, the Industry sector,

with 2018 emissions of about 7 MtCO2e, has a 2030 ceiling of 4 MtCO2e, indicating a 35% reduction (see Section 9.3).

9.6.4.5 Climate Change Risk Assessment-Criteria for Climate Vulnerability

Climate change risk assessment is a risk assessment-based methodology for identifying potential climate impacts and assessing their severity. Carrying out a climate change risk assessment, at the simplest level, can be summarised into the following steps:

- identifying potential climate change risks to a scheme or project.
- assessing these risks (potentially prioritising to identify the most severe); and
- formulating mitigation actions to reduce the impact of the identified risks.

Any assessment of risk includes assessing the likelihood (or probability) and magnitude (or severity) of the impacts identified. This method is widespread within the climate change resilience assessments carried out by projects and cities to date.

The risk assessment assesses the likelihood and consequence of the impact occurring to each receptor, leading to the evaluation of the significance of the impact and 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.

To evaluate the likelihood of climate risk, we have utilised the baseline environmental information provided in Section 9.2, future climate change models, and insights from other experts involved in the Proposed Development (e.g., hydrologists and traffic consultants).

Initially, a preliminary screening/vulnerability assessment Climate Change Risk Assessment (CCRA) focusing on the operational phase is performed, following the TII guidance PE-ENV-01104 (2022). This involves assessing the sensitivity of the development assets (i.e., receptors) and their exposure to climate change hazards. Each asset category within the Proposed Development must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 outlines the asset categories and climate hazards that should be considered.

The specific asset categories will differ depending on the type of development and need to be determined on a case-by-case basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2**.**
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis can be completed. 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 i.e. climate screening.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Section 9.2 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. Where residual medium or high vulnerabilities exist, the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks.

According to TII guidance and EU technical guidance, if all identified vulnerabilities are reasonably ranked as low, a detailed climate risk assessment may not be necessary i.e. it is screened out. In such cases, the impact of climate change on the development would be deemed insignificant.

However, if there are residual medium or high vulnerabilities, a more detailed climate change risk assessment may be required, along with the implementation of additional mitigation measures to address the risks. The TII guidance specifies that a construction phase Climate Change Risk Assessment (CCRA) is only required if a detailed CCRA is deemed necessary.

Table 9-2: Vulnerability Matrix

	Exposure			
Sensitivity		High (3)	Medium (2)	Low (1)
	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 vulnerability conclusions for each impact are based on, and incorporate, confirmed design and mitigation measures. Where the assessment concludes that the impact remains high, the project team may need to identify additional adaptation/EIA mitigation measures.

The screening CCRA (vulnerability assessment), detailed in Section 9.9.3.2, 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 were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 9.11

9.6.5 Consultation

The overall project stakeholder and public consultation undertaken in respect of the Project is set out in the Planning Report. All feedback was collated, including feedback specific to the EIAR topic 'Climate'. This feedback has informed this chapter including the baseline and impact assessment presented.

Specific consultation was also undertaken with key stakeholders in relation to EIA Scoping. A summary of the issues raised in relation to the scope of the EIA is included in Appendix A & B of the Planning Report. Feedback on the scope and level of detail of the assessment, data sources and methodologies as they pertain to the EIAR topic 'Climate' have been reviewed and have influenced this chapter of the EIAR.

Specific consultation was also undertaken with representatives of various Departments in South Dublin County Council (SDCC). This included a combination of presentations, workshops, and meetings to discuss the project, technical design issues and environment and planning matters.

Two pre-application meetings were held with SDCC Planning Department and representatives from relevant SDCC departments to explain the project and present technical and environmental information. Summary information with respect to these is provided by Armstrong Fenton's Planning Report and has been reviewed and has influenced this chapter of the EIAR.

9.6.6 Difficulties Encountered / Limitations

Difficulties were encountered during the quantification of materials at the design stage in order to assess the embodied construction carbon. The exact volumes of materials, location of waste disposal sites, sourcing of products and technical specification for materials are finalised during the detailed design phase and by the appointed contractor. Throughout the assessment, efforts have been made to provide the most likely scenario of the embodied carbon assessment. Where it is required to make assumptions as the basis of the assessment presented here, these assumptions are based on advice from competent project designers and are clearly outlined within the chapter.

9.7 Receiving Environment

Climate refers to the average weather conditions over a period of time, typically 30 years, while climate change denotes a substantial alteration in these average conditions. Although climate change can occur naturally, human activities in recent years have accelerated its pace through the emission of GHG (GHGs), as noted by the IPCC in 2015. These anthropogenic GHGs are changing the composition of the Earth's atmosphere, leading to an enhanced 'Greenhouse Effect.' This effect increases the atmosphere's capacity to trap heat, resulting in a rise in average global temperatures over the past four decades. The burning of fossil fuels,

which releases significant amounts of carbon dioxide (CO2), has been and remains a major contributor to this enhanced greenhouse effect. The most critical GHGs include carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O).

Global climate change refers to the long-term shift in temperature and weather patterns on Earth, primarily driven by human activities such as burning fossil fuels, deforestation, and industrial processes. These activities increase the concentration of greenhouse gases in the atmosphere, enhancing the greenhouse effect and leading to a rise in average global temperatures. This warming impacts natural systems, causing more frequent and severe weather events, melting polar ice, rising sea levels, and disruptions to ecosystems and biodiversity. The effects of climate change are profound, affecting agriculture, water resources, health, and the economy, necessitating urgent and sustained efforts to mitigate and adapt to these changes.

Ireland is also experiencing the impacts of a changing climate with the rise in the annual surface air temperature by 0.8% since 1900. In addition to temperature, we are seeing increased rainfall and sea-level rise and observing changes in the frequency of extreme weather like storms, flooding, and drought (EPA, 2023). Examples of extreme weather would be Storm Ophelia in 2017 and the Beast from the East in 2018 to name two of the most impactful.

9.7.1 Current Baseline

9.7.1.1 Existing GHG Emissions Baseline

Ireland's latest publicly available greenhouse gas (GHG) emissions from 1990-2024 are based on SEAI's provisional energy balance released in June 2025 (EPA, 2025). In 2024, total national GHG emissions (excluding LULUCF) are estimated at 53.75 Mt CO2eq, which is 2.0% lower (1.09 Mt CO2eq) than in 2023 (54.85 Mt CO2eq), following a 6.8% decrease in emissions reported for 2023. Emissions in 2024 are 3.6% lower than the 1990 baseline—the first such drop in 33 years. National total emissions including Land Use Land Use Change and Forestry (LULUCF) decreased by 1.9% to 57.65 Mt CO2eq. ETS4 and ESR emissions fell by 7.4% and 0.5% respectively (EPA, 2025).

Climate impacts are evaluated at a national level, considering national targets and sectoral emission ceilings. The study area for climate assessments is the Republic of Ireland, with the baseline established in the context of this geographic focus.

In 2023 emissions in the stationary ETS1 emissions decreased (17%) and emissions under the ESR (Effort Sharing Regulation) decreased (3.4%). When LULUCF is included, total national emissions decreased by 3.8% (EPA, 2025).

Decreased emissions in 2023 compared to 2022 were observed in the largest sectors except for transport which showed an increase of 0.3% shown highlighted red in the "Emissions change 2022-2023" table 8.3 below (EPA, 2025). Climate impacts are evaluated at a national level, considering national targets and sectoral emission ceilings. The study area for climate assessments is the Republic of Ireland, with the baseline established in the context of this geographic focus. The table shows that the Residential sector accounted for 5.3% of emissions in 2023.

Table 9-3 Emissions change 2022-2023 Ireland.

Mt CO_2 eq	2022	2023	% Change
Agriculture	21.782	20.717	-4.9%
Transport	11.759	11.798	0.3%
Energy Industries	10.003	7.860	-21.4%
Residential	5.753	5.347	-7.1%
Manufacturing Combustion	4.356	4.152	-4.7%
Industrial Processes	2.294	2.155	-6.1%
F-Gases	0.719	0.675	-6.0%
Commercial Services	0.734	0.715	-2.6%
Public Services	0.690	0.671	-2.7%
Waste	0.870	0.844	-3.0%
LULUCF	3.655	3.895	6.5%
Total excluding LULUCF	**58.960**	**54.934**	-6.8%
Total including LULUCF	**62.616**	**58.829**	-6.0%

Emissions per capita decreased from 11.31 tonnes CO_2eq/person in 2022 to 10.34 tonnes CO_2eq/person in 2023. Ireland's average tonnes of GHG/capita over the last ten years were 12.08 tonnes. With CSO 2023 census data showing a population of 5.28 million people and with population projected to increase to 5.67 million in 2030, 6.05 million in 2040 and 6.33 million by 2050, per capita emissions need to reduce significantly. At current per capita emission levels, each addition 500,000 people would contribute an additional 5 million tonnes of CO_2eq annually.

The EPA also publishes GHG emission projections to 2055. Table 10.14 shows that in the WAM scenario the percentage reduction is not achieved for electricity, transport, industry, agriculture and other (comprises of waste, fluorinated-gases and petroleum refining). Looking at the overall percentage emissions reduction target of -51% by 2030 compared to 2018, the projections are indicating a significant shortfall with only a -29% reduction achieved thus predicting that Ireland will not achieve its legally binding climate target (EPA, 2024).

Table 9-4 Assessment of Achievement of Sectoral Percentage Targets under the With Additional Measures scenario (EPA)

Sector	Emissions 2018 (Mt CO_2eq)	Projected Emissions 2030 (Mt CO_2eq)	Percentage Change 2030 vs 2018	Target Reduction 2030 vs 2018	Percentage Change (Reported in 2024) 2030 v 2018
Electricity	10.2	3.1	-0.7	-75%	-0.66
Transport	12.3	9.7	-0.21	-50%	-0.29

Buildings (Residential)	7	5.4	-0.22	-40%	-0.4
Buildings (Commercial & Public)	1.5	1	-0.36	-45%	-0.6
Industry	7	6.1	-0.12	-35%	-0.24
Agriculture	21.4	18	-0.16	-25%	-0.18
Other	2.1	1.6	-0.25	-50%	-0.25
LULUCF* *(no ceiling currently)*	4	5.5	0.39	N/A	0.17
Total with LULUCF	65.6	50.6	-0.23	-51%	-0.29

**A direct comparison of emissions in the Agriculture sector against its Sectoral Emission Ceilings is no longer viable.*
*** Waste, F-gases and Petroleum Refining*
****National objective includes LULUCF*

9.7.2 Future GHG Baseline

In line with TII and ISEP Guidance the future baseline is a trajectory towards net zero by 2050, "whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050" (ISEP, 2022). Formerly known as the Institute of Environmental Management and Assessment (ISEP), now rebranded as the Institute of Sustainability and Environmental Professionals (ISEP).

The future baseline for GHG emissions assessment will be considered in relation to the future Irish climate targets which the assessment results will be compared against.

The future baseline will be based on Ireland achieving the targets outlined in the Climate Action Plan 2025 (CAP25) and subsequent Climate Action Plans, as well as meeting binding EU targets for 2030. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted '*Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013*' (hereafter referred to as the Regulation). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its GHG emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters Including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and thus includes GHG emissions from transport, residential and commercial buildings and agriculture.

9.7.3 Current CCRA Baseline

Impacts to the proposed Project as a result of climate change involve increases in temperatures and increases in the number of rainfall days per year. Ireland has observed increases in the annual rainfall in the north and west of the country, with small increases or

decreases in the south and east including in the region where the proposed Project will be located. The EPA (2021) has compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed Project:

- Increase of 1 to 4 degrees Celsius in average temperature;
- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species

The proposed Project area experiences a temperate, maritime climate, resulting in mild winters and cool summers. The Met Éireann weather station at Casement, County Dublin, is the nearest weather and climate monitoring station to the proposed Project that has meteorological data recorded for the 30-year period from 1991 to 2020 (Met Eireann, 2023). The monitoring station is located approximately 3.28 km north of the proposed Project at its nearest point (Boherboy). Meteorological data recorded at Casement over the 30-year period from 1991 to 2020 indicates that the wettest months were November and December, and the driest month on average was March. July was the warmest month with a mean temperature of 15.7°C.

Met Éireann recent weather patterns were analysed, they highlight a marked rise in both the frequency and intensity of storms. Notable examples include Storm Darwin in February 2014, Storm Emma in March 2018, Storm Ophelia in October 2018, and Storm Eowyn in January 2025. During Storm Ophelia, Casement Airport recorded its highest wind gust, reaching 117 km/h, with a sustained 10-minute wind speed of 85 km/h.

Annual rainfall from 1981 to 2010 was 3.8% lower compared to the 30-year period from 1991 to 2010. On 24 October 2011, Casement Airport recorded 76.5 mm of rainfall over a 9-hour span, an event with an annual probability of once in 60 years. As rainfall has increased in Ireland, recent years have seen more intense historical precipitation events, such as the heavy rainfall and flooding in the summer of 2008, severe flooding in November 2009, and the heavy rainfall in the Greater Dublin Area on 24 October 2011. The latest data from Met Éireann's 'The Status of Irish Climate 2020 Report' highlights that the 10-year period from 2006-2015 was the wettest recorded decade (Met Eireann, 2021).

Met Éireann's 2024 Climate Statement states 2024's average shaded air temperature in Ireland is provisionally 10.72 °C, which is 1.17°C above the 1961-1990 long-term average. This makes 2024 the fourth warmest year on record, 0.49 °C cooler than 2023, the warmest year on record. The five warmest years on record are 2023, 2022, 2007, 2024 and 1945. Seven of the top ten warmest years have occurred since 2005. (Met Eireann, 2024).

In 2024, Ireland experienced below-average rainfall, including the warmest May on record. Since April 2023, record-high sea surface temperatures (SST) were observed, with a severe marine heatwave affecting the western coast of Ireland in June 2023. This marine heatwave contributed to the unprecedented rainfall in July 2023 (Met Eireann, 2024).

Recent weather patterns and extreme weather records from Met Éireann have been examined. Given the exceptional data from 2023 and 2024, Met Éireann notes that current Irish climate projections predict continued warming, including milder winters. The record

temperatures increase the likelihood of extreme weather events, leading to longer dry periods and heavier rainfall. Additionally, sea level rise is expected to cause more storm surges and coastal flooding, with an increase in compound events where coastal surges and extreme rainfall occur simultaneously. While Met Éireann is confident that maximum rainfall rates will rise, there is less certainty about how the frequency or intensity of storms will change with climate change.

Surface air temperature plays a crucial role in climate analysis, influencing ecosystems, livelihoods, and human activities. Changes in temperature affect various sectors, including health, agriculture, and energy demand. In Ireland, over a century of consistent temperature measurements is available. Globally, the average surface air temperature has increased by 0.85°C over the past 100 years, with the rate of warming nearly doubling since 1975, reaching an equivalent of a 1.65°C rise per century. The five warmest years on record globally are now 2020 through 2024, with 2024 confirmed as the warmest year ever recorded since temperature monitoring began in the late 1800s. This marks a dramatic continuation of the warming trend observed over the past decade, with all ten of the warmest years occurring since 2015 (Met Éireann 2025).

9.7.4 Future CCRA Baseline

The EPA-funded research project ‘Ensemble of Regional Climate Model Projections for Ireland Report No. 159’ (EPA 2015) forecasts significant reductions in mean annual, spring, and summer precipitation, with longer dry spells expected. By 2050, the most pronounced decreases are projected for summer, with reductions ranging from 0% to 13% under medium-to-low emission scenarios and 3% to 20% under high emission scenarios. In contrast, heavy precipitation during winter and autumn is expected to increase by up to 20%. Additionally, the number of extended dry periods during autumn and summer is anticipated to rise considerably by mid-century.

The report suggests that the total number of North Atlantic cyclones is expected to decrease by 10%, along with a reduction in average mean sea-level pressure of 1.5 hectopascals (hPa) across all seasons by mid-century. Wind energy is anticipated to decline in spring, summer, and autumn, with an increase expected in winter. Additionally, the predicted rise in extreme storm activity could negatively impact future wind energy supply.

The EPA's State of the Irish Environment Report (Chapter 4: Climate Change) further highlights that projections indicate that the comprehensive implementation of additional policies and measures from the 2019 Climate Action Plan could reduce Ireland’s total GHG emissions by up to 25 percent by 2030 compared to 2020 levels. Climate change is already a current issue in Ireland, with a temperature increase of approximately 0.8°C since 1900. The report further highlights the importance of strong public sector climate leadership and the rapid acceleration of decarbonisation efforts if we are to halt the climate crisis (EPA, 2024).

Accurate climate projections are a key scientific input for national policymakers when planning for, and adapting to, the challenges posed by climate change. Climate projections are produced using climate models, which have been developed by scientists over recent decades and are capable of simulating Earth’s past, present, and future climate. Global Climate Models (GCMs) are used to model the global impacts on Earth’s climate of increasing GHG concentrations in the atmosphere at a resolution of ~50km or coarser. Regional Climate Models (RCMs) are used to capture key small-scale atmospheric features on the scale of 1-

10km, such as local convection and wind gusts. Multi-model ensembles are often used in climate prediction studies to quantify associated model uncertainty.

RCMs utilise the output of GCMs and model regional climates at higher spatial resolutions; this process is known as dynamic downscaling. This approach allows key climate variables to be modelled more precisely, including precipitation; near-surface temperature; and the number and intensity of low-pressure systems. Low pressure systems are the primary driver of precipitation and wind affecting the country; therefore, the added value of RCMs in the modelling of low-pressure systems is of particular importance for Ireland.

Concentration trajectories known as Representative Concentration Pathways (RCPs) were utilised in EPA Research Report No.339 High resolution Climate Projections for Ireland – A Multi-model Ensemble Approach (EPA 2020). For the EPA study, two RCPs were chosen, RCP4.5 and RCP8.5. RCP4.5 is considered an intermediate scenario, while RCP8.5 is considered to be representative of a potential worst-case scenario. This is the only available climate projection data for Ireland which has been developed for policy makers, and is steered by DECC, the EPA, Met Eireann, and the LA CAROs.

The future climate was modelled using both the Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. The study suggests that by mid-century (2041–2060), average annual temperatures are projected to rise by 1–1.2°C under RCP4.5 and 1.3–1.6°C under RCP8.5, with the most significant increases in the east. Temperature extremes are expected to become more pronounced, with summer daytime and winter night-time temperatures increasing by 1–2.4°C. The number of frost and ice days is projected to decrease by approximately 50%. Summer heatwaves are likely to become more frequent, especially in the south. Additionally, precipitation is expected to become more variable, with a significant increase in both dry periods and heavy rainfall events.

Established in June 2022, the National Framework for Climate Services (NFCS) aims to streamline the provision of climate services in Ireland and will be led by Met Éireann. The NFCS is designed to facilitate the co-production, delivery, and utilization of precise, actionable, and accessible climate information and tools to enhance climate resilience planning and decision-making. In parallel with the NFCS, ongoing research is being conducted through the TRANSLATE project. This initiative, led by climate researchers from the University of Galway's Irish Centre for High End Computing (ICHEC) and University College Cork's SFI Research Centre for Energy, Climate, and Marine (MaREI), with support from Met Éireann climatologists, is focused on advancing climate science. TRANSLATE generates outputs using internationally reviewed models from CORDEX and CMIP5, with Representative Concentration Pathways (RCPs) offering a range of possible futures based on different human activity scenarios.

TRANSLATE offers the first standardised and bias-corrected national climate projections for Ireland, designed to support climate risk decision-making across various sectors, such as transport, energy, and water. The bias correction means that users can use the data directly (which is not always possible).

It provides insights into potential changes in Ireland’s climate under global temperature increases of 1.5˚C, 2˚C, 2.5˚C, 3˚C, or 4˚Cs. These projections generally align with previous forecasts for Ireland. The country's climate is heavily influenced by the Atlantic Meridional Overturning Circulation (AMOC), a major system of ocean currents, including the Gulf Stream, which features a northward flow of warm water and a southward flow of cold water. This

system prevents Ireland from experiencing the extreme temperatures seen in other countries at similar latitudes. Recent studies suggest that the AMOC may weaken by 30–40% by 2100, leading to cooler North Atlantic Sea Surface Temperatures (SSTs). Despite this, Ireland is expected to continue warming, though the cooling effect of the AMOC might moderate the warming relative to continental Europe. Additionally, a weakened AMOC is anticipated to contribute to further sea level rise around Ireland. Climate change will cause significant shifts in temperature and rainfall patterns: average summer temperatures could rise by more than 2°C, summer rainfall could decrease by 9%, and winter rainfall could increase by 24%. Future projections also include a tenfold rise in the frequency of summer nights with temperatures exceeding 15°C by the end of the century, a decrease in the frequency of cold winter nights, and an increase in heatwaves. In Ireland, a heatwave is defined as a period of five consecutive days with daily maximum temperatures above 25°C.

9.7.5 Evolution of the environment in the absence of the project

Annex IV of the EIA Directive sets out the information required to be included in an EIAR. This includes:

"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 Proposed 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".

If the proposed development does not proceed, future baseline conditions have been evaluated. In the "do-nothing" scenario, there will be no construction activities or related GHG emissions. However, potential reductions in GHG and local benefits like energy-efficient homes, new roads, and biodiversity improvements will also be lost.

As the site is zoned for development, in the absence of the proposed development, it is likely that a development of a similar nature will 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.

9.8 Climatics Multi-Climate Hazard Analysis for (53.279771525, -6.44442880)

Under each scenario, nine categories of climate risk indices (20+ hazards) were assessed. The findings and recommendations are summarised in the following table. For the key indices, both the chronic risk (average trend) and acute risk (extremes) are provided. For example, the change in mean temperature and fire weather days are introduced in the temperature-related indices, as temperature is considered as the most relevant impact factor for climate change on asset resilience.

Table 9-5: Assessment of climate risk indices

Category	Hazard	Summary	Exposure Level
Cloud Related	Cloud Cover	Historic average cloud cover in the area was 78.07%. This is projected to decrease to 77.48% (-0.59%) under SSP1-2.6 and 76.42% (-1.65%)	4

		under SSP5-8.5 for 2050.	
Drought And Floods	Flood Events	The historic inundation of 100-yr flood event is 0.00 m. This is projected to 0.00 m (0%) under SSP1-2.6 and 0.00 m (0%) under SSP5-8.5 for 2050.	1
	Water Stress	The water stress index ranges from 1 to 5, with 1 indicating low stress and 5 indicating high stress. The historic water stress is rated as 0.13. And this is projected to increase to 5.00 under SSP1-2.6 and 5.00 under SSP5-8.5 for 2050.	5
Hailstorm	Hailstorm Frequency	Historical hailstorms in this location were 0.12 events/year.	n/a
Heat Stress	Heat Stress Index	The historic heat stress index in the area is 12.54. And this is projected to increase to 13.77 under SSP1-2.6 and 14.34 under SSP5-8.5 scenarios for 2050.	2
Irridiance At Surface	Surface Reaching Solar Radiation	The surface reaching solar radiation in the area was historically 119.88 W/m² and this is projected to increase to 125.94 W/m² under SSP1-2.6 and 124.52 W/m² under SSP5-8.5 for 2050.	2
Lightning	Lightning Density	The historic lightning density in the area was 0.01 event/1000km2/year	n/a
Rainfall Related	Annual Max. 1-Day Precipitation	Historic annual maximum 1-day precipitation in the area was 34.60 mm. This is projected to increase to 37.16 mm under SSP1-2.6 and 37.86 mm under SSP5-8.5 for 2050	4
	Annual Max. 5-Day Precipitation	Historic annual maximum 5-day precipitation in the area was 64.22 mm. This is projected to increase to 72.16 mm under SSP1-2.6 and 69.42 mm under SSP5-8.5 for 2050.	4
	Extreme Precipitation	Precipitation over 99% quantile is defined as extreme precipitation. The historic average extreme precipitation is 61.10 mm for a year and this is projected to increase to 76.05 mm (+24.46%) under SSP1-2.6 and 72.89 mm (+19.30%) under SSP5-8.5 for 2050.	4
	Heavy Precipitation Days	Precipitation over 10mm is defined as heavy precipitation. The historic average heavy precipitation days in the area was 24.91 days in a year. This is projected to increase to 26.19 days under SSP1-2.6 and	5

		26.76 days under SSP5-8.5 for 2050.	
	Average Annual Precipitation	Historic average precipitation in the area was 1008.94 mm/year. This is projected to increase to 1010.71 mm/year under SSP1-2.6 and 1006.09 mm/year under SSP5-8.5 for 2050.	5
Subsidence And Landslide	Landslides	The historic landslide in the area is 0.00.	n/a
	Subsidence Susceptibility Index	Subsidence susceptibility index ranges from 1-6, as very low, low, medium low, medium high, high, very high. The historic subsidence susceptibility index in the area is 3.00 and is projected to be 0.00 for 2040.	n/a
Temperature Related	Cold Days	The historic cold days in the area were 7.75% per year. This is predicted to decrease to 3.03% under SSP1-2.6 and 1.54% under SSP5-8.5 for 2050.	1
	Days >35°C	The historic days above 35°C in the area were 0.00 days per year. This is predicted to increase to 0.00 days under SSP1-2.6 and 0.00 days under SSP5-8.5 for 2050.	1
	Days >40°C	The historic days above 40°C in the area were 0.00 days per year. This is predicted to 0.00 days under SSP1-2.6 and 0.00 days under SSP5-8.5 for 2050.	1
	Fire Weather Days	The historic fire weather days in the area were 22.09 days per year. This is predicted to increase to 32.16 (+45.57%) days under SSP1-2.6 and 39.02 (+76.65%) days under SSP5-8.5 for 2050.	3
	Mean Temperature	The historic mean annual temperature in the area is 9.63°C. This is projected to increase to 10.59°C (+0.96°C) under SSP1-2.6 (optimistic) and 11.13°C (+1.50°C) under SSP5-8.5 (business as usual or pessimistic scenario) for 2050.	3
	Warm Days	Warm days are defined as when the maximum temperature is beyond 90% percentile. The historic warm days in the area are 13.64% per year and this it projected to increase to 27.65% under SSP1-2.6 and 33.58% under SSP5-8.5 scenarios for 2050.	4
Wind Related	Storm Wind Speed	The historic storm wind speed of the area is 16.64 m/s and this is	4

		predicted to be decrease to 16.22 m/s (-2.56%) for SSP5-8.5 scenario for 2050.	
	Wind Speed	Historic average wind speed in the area was 5.29 m/s. This is projected to be 5.04 m/s under SSP1-2.6 and 5.16 m/s under SSP5-8.5 for 2050.	5

9.9 Characteristics of the Proposed Development

For a detailed description of the Proposed Development please refer to Chapter 2 of this EIAR. Impacts to climate will occur during both the construction and operational phases of the developments.

During the construction stage the main source of climate impacts will be as a result GHG emissions and embodied carbon associated with construction materials and construction activities for new buildings.

During the operational phase vehicle emissions from traffic accessing the site and energy use for space heating, hot water, lighting and electrical devices have the potential to release carbon dioxide (CO2) and other GHGs which will impact climate.

In addition, the vulnerability of the Proposed Development in relation to future climate change must be considered during the operational phase.

9.10 Potential Impact of the Proposed Development

During both the construction and operational phases of the development, there is potential for various greenhouse gas emissions to be released into the atmosphere. According to TII guidance, the significance of these GHG emissions on the climate is evaluated based on the total emissions across all stages of the Proposed Development.

9.10.1 Construction Phase GHG Assessment

The TII Carbon toolkit was utilised to quantify the construction phase embedded carbon for the Proposed Development. This toolkit can quantify carbon in infrastructure projects using Ireland-specific emission factors and data. Detailed project information including tonnage of materials was obtained from the Engineering Design Team.

For the building elements of the proposed development, the One Click LCA 3D Designer tool was utilised. One Click LCA is certified to EN 15978, EN 15978, ISO 21931 – 1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at 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 One Click 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

GHG emissions have been quantified at all aspects of the construction phase including the following stages:

- Production stage: Embodied carbon is the carbon contained within a material or product. It is the sum of all carbon emissions that have been generated during the extraction, processing, and manufacturing of a particular product. Mitigation will be required as part of the demolition works to reduce the embodied carbon impact. Where possible demolished materials should be re-used on site or sent to a suitably licenced waste facility for re-use on other sites. Brickwork, concrete, steel and glazing are materials which have the potential for very high embodied carbon but also have to potential for recovery or recycling.
- Transportation to site: emissions associated with the carbon miles of the project materials. The impact of transporting materials from factory/source to site to facilitate construction is reported separately. A series of assumptions are made about the variables that impact transport emissions (material density, vehicle type, vehicle capacity and distance travelled) and assuming that the material may be transported from sources locally within 50km, regionally within 100km and nationally within 250km;
- Site Operations/Construction activities:
    - Site clearance emissions associated with plant and machinery required to clear the site. The carbon tool has a range of assigned land use categories for estimating site clearance. Different land use types have higher or lower carbon intensity for site clearance, which is linked to the energy required to clear the site.
    - Emissions arising from excavation activities based on the energy used in excavation activities. Energy expenditure varies depending on the type of ground to be excavated, e.g., rock excavation is much more energy intensive than topsoil excavation;
    - Construction activities covers carbon emissions generated during the construction of the proposed Project based on the scale and duration of the project; and
    - The generation of waste during the construction phase has potential for climate impact and the nature and scale of this impact depends on the type and volume of waste generated coupled with the nature of the waste treatment (reuse, recycling, recovery or disposal).
- Material replacement & refurbishment: Ongoing material refurbishment and replacement throughout the lifetime of the development is included within this stage of the GHG assessment these are default values based on the typical maintenance requirements for the chosen material types over the assumed 50-year lifetime

The results of the assessment of the above stages using the TII and One Click LCA Tool are presented in Section 9.7 and Figures 5 & 6. The results indicate that the total GHG emissions

generated as a result of the construction of the proposed Project are 388,702,28 kg of CO2eq (38,870 tonnes CO2eq).

The carbon assessment has identified hotspots for embodied carbon emissions, particularly those associated with building materials. These emissions have been calculated using standard default materials for different building types within the tool, as detailed material information was not available at this stage of the project. Additionally, the average material types from the TII Carbon Tool were utilised for this assessment due to the lack of more specific information.

As anticipated construction materials represent the largest portion of carbon emissions for the Proposed Development, constituting about 82% of the total embodied carbon emissions during the construction phase across the different buildings. The highest carbon impact is observed in the external walls, beams, floors, and roofs, based on the standard default values and assumptions used in the carbon calculations. The rest of the construction phase's embodied carbon emissions come from transportation to the site, site operations, and material replacement.

The total embodied carbon for the construction phase, including the maintenance and replacement of materials throughout the development's lifetime, has been calculated at 38,870 tonnes CO2e (see Section 9.6). Since the overall GHG emissions from the development cannot be directly compared to a single sector's 2030 carbon budget, the emissions are categorised into different assessment areas. These categories must be individually compared to the relevant sectoral emissions budgets, as outlined in Section 9.6. For the Proposed Development, the applicable sectoral emissions budgets include those for Industry Buildings (Residential), Transport, and Waste. The projected emissions for the development are annualised over an assumed 50-year lifespan and then compared to the relevant sector's 2030 carbon budgets. This annualization process facilitates a proper comparison with annual GHG targets.

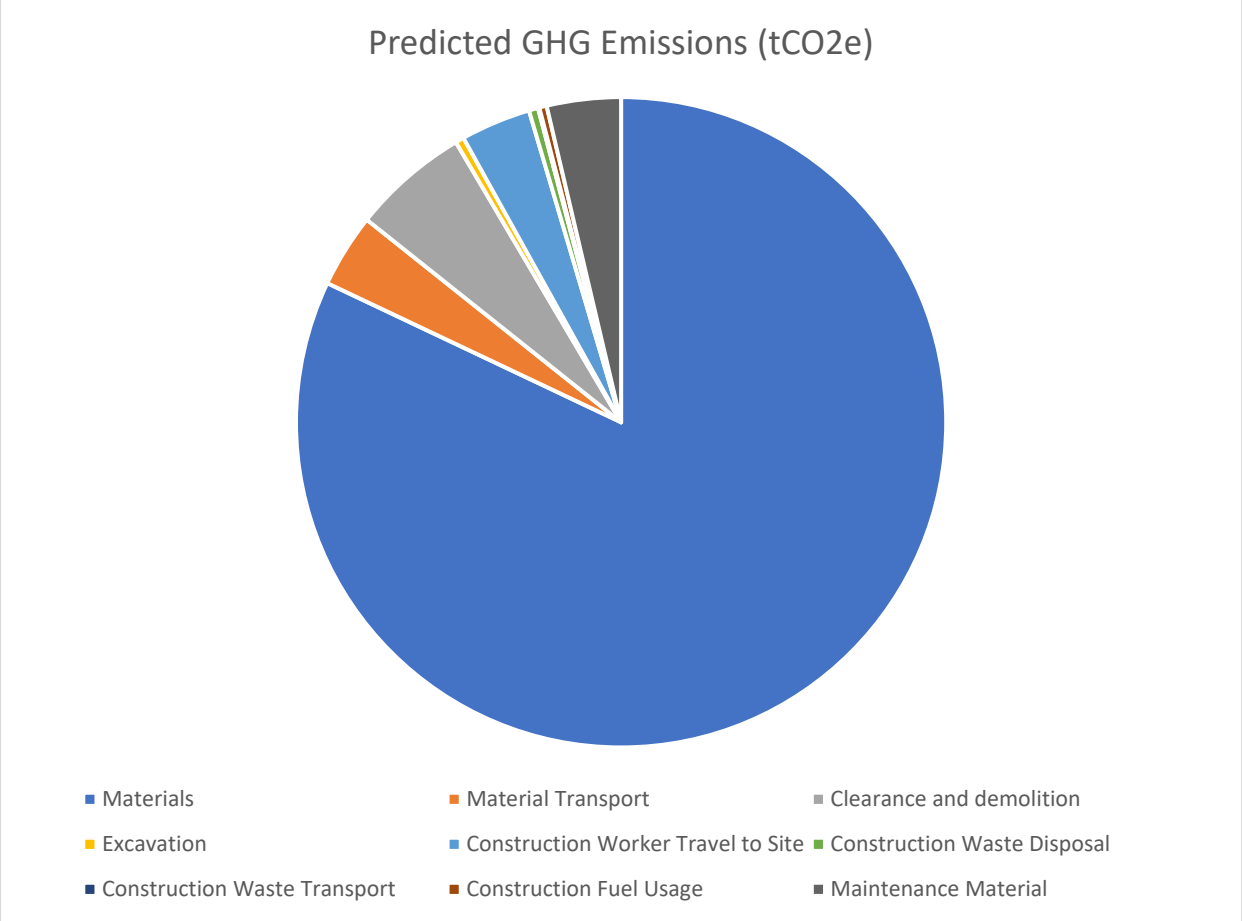
Table 9-6 Construction Phase Greenhouse Gas Emissions

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Relevant Sector for Cabron Budget Comparison	Annualised GHG Emissions as % of Relevant Cabron Budget
Production Stage	Materials	31,888	Industry	0.015944%
Transportation to site	Material Transport	1,425	Transport	0.000475%
Site Operations/ Construction activities	Clearance and demolition	2,259	Industry	0.001130%
Site Operations/ Construction activities	Excavation	165	Industry	0.000083%
Site Operations/ Construction activities	Construction Worker Travel to Site	1,354	Transport	0.000451%

Site Operations/Construction activities	Construction Fuel Use	178	Industry	0.000357%
Site Operations/ Construction activities	Construction Waste Disposal	26	Waste	0.000009%
Site Operations/ Construction activities	Construction Waste Transport	143	Transport	0.000048%
Material replacement & refurbishment	Maintenance Material	1,430	Industry	0.000715%
Total		38,870 tCO_2e		

Note 1 Project lifespan assumed 50 years for calculation purposes in line with best practice

Figure 9-5: Construction Categories Greenhouse Gas Emissions tCO_2e



The projected GHG emissions (outlined in Section 9.7) can be averaged across the entire lifespan of the Proposed Development to provide annual emissions estimates, facilitating direct comparison with national annual emissions and targets.

Section 9.7 compares these GHG emissions with the 2030 carbon budgets for the transport, industry, and waste sectors, Ireland's total GHG emissions for 2022, and Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions from 2005 levels (33 Mt CO2e) as specified in Regulation EU 2018/842.

When annualised over the Proposed Development's 50-year lifespan, the estimated total GHG emissions amount to 0.0013% of Ireland's total GHG emissions in 2023 and 0.0023% of Ireland's non-ETS 2030 emissions target. Specifically, emissions from transport-related activities account for 0.0129% of the 2030 Transport budget, construction waste emissions represent 0.0777% of the Waste budget, and industry-related emissions comprise 0.0194% of the 2030 Industry budget.

Table 9-7 Estimated Construction GHG Emissions relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Sector Annualised Proposed Development GHG Emissions are Compared	Annualised Proposed Development GHG Emissions as % of Relevant Target/Budget
Ireland's 2023 Total GHG Emissions (existing baseline)	58,829,000	Total GHG Emissions	0.0013%
Non-ETS 2030 Target	33,381,312	Total GHG Emissions	0.0023%
(Industry Sector) 2030 Sectoral Budget	4,000,000	Total Industry Emissions	0.0194%
(Transport Sector) 2030 Sectoral Budget	6,000,000	Total Transport Emissions	0.0129%
(Waste Sector) 2030 Sectoral Budget	1,000,000	Total Waste Emissions	0.0777%

9.10.1.1 Impact of Climate Change on the Proposed Construction Phase

According to the 'LA 114 (2019) – Climate' guidance, which has been successfully implemented in the UK and referenced by the EPA here in Ireland, a qualitative assessment of disruption risk should be reported for the construction phase. The guidance suggests that changes to long-term seasonal averages due to climate change are not anticipated to be significant by the construction year, as predictions are typically cantered around mid-century. However, flooding during construction remains a possibility, and the areas at risk of flooding are detailed in Chapter 7 on Water (Including Hydrology & Flood Risk). Flood risk measures and extreme weather considerations have been integrated into the construction planning process.

According to the detailed appraisal carried out in Chapter 7. Hydrology, the site's hydrological regime is local in scale, with low-permeability tills and small tributaries (Corbally, Coldwater,

and Cooldown) crossing the land. While pluvial and groundwater flooding are not considered significant hazards, CFRAM (Catchment-based Flood Risk Assessment and Management)/OPW mapping confirms that part of the northern boundary lies within Flood Risk Zones A and B, indicating potential fluvial flooding during high-flow events. The site-specific flood risk assessment (SSFRA) identified key risks including temporary groundwater drawdown during excavation, loss of natural floodplain storage, and the need to maintain stream flow during marsh translocation works.

Construction-phase impacts may include short-term changes to flow patterns, a need for localised dewatering, and temporary stream diversions. However, the Hydrology Chapter confirms that with the implementation of design and mitigation measures, such as compensatory flood storage, elevated floor and road levels, SuDS infrastructure across nine sub-catchments, and sediment control during works. These measures ensure that any flood-related disruption during construction is assessed as neutral to slight to moderate, temporary, and non-significant in the context of the EIA Directive.

Mitigation measures are outlined in Section 7.7 of Chapter 7 Hydrology (Including Hydrology & Flood Risk) to manage flood risk impacts during the construction stage, affecting the rail line, construction zones, and nearby properties. With these measures implemented, the risk of climate change impacts, particularly flooding, during the construction phase of the proposed project is not deemed significant.

9.10.2 Operational Phase

9.10.2.1 Operational Impacts

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future years. However, adequate attenuation and drainage have been provided for to account for increased rainfall in future years as part of the design of this development. Therefore, the impact will be long-term, localised, neutral and imperceptible.

There is the potential for a number of GHG emissions to the atmosphere during the operational phase of the development. The main sources of GHG emissions from the operational stage of the development arise from heating, domestic hot water, and lighting. The proposed project will introduce sustainable and renewable energy technology to the development. Ongoing maintenance of the Proposed Development materials has been accounted for within Section 9.10.1 above. The following section outlines the impact of operational energy use on GHG emissions.

There is also the potential for increased traffic volumes to impact climate. The change in AADT values is not of the magnitude to require a detailed climate assessment as per the DMRB screening criteria outlined in Section 9.6.3 (UK Highways Agency, 2019b). It can therefore be determined that traffic related CO2 emissions during the operational phase are long-term, localised, neutral and imperceptible.

The Proposed Development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. These are outlined fully within the Energy Statement prepared by BBSC and are summarised below.

The development will be a Nearly Zero Energy Building (NZEB) in accordance with the Part L2021 requirements. Each building will have a Building Energy Rating (BER) that will comply with the Part L requirements. The following measures, or similar will be incorporated into the Proposed Development to achieve a more energy efficient (i.e. less carbon intensive) design. All measures will be reviewed at the detailed design stage and the most appropriate options will be implemented.

- High performance U-values;
- Improved air tightness;
- Improved thermal transmittance and thermal bridging;
- Use of renewable technologies to ensure energy consumption is in line with the Part L 2021 requirements
- Both internal and external lighting to be energy efficient LED lighting.
- Water Heating plant is proposed to consist primarily of Exhaust Air Heat Pumps with back up heater.
- Building materials will be high-quality and long-lasting to reduce the requirement for regular maintenance or replacement which will reduce the embodied carbon footprint of the development.

It is proposed to incorporate bicycle and electric vehicle parking spaces within the Proposed Development to promote the use of sustainable transport. Overall, these measures will aid in reducing the impact to climate during the operational phase of the Proposed Development. Full descriptions of the measures proposed, and their benefits are outlined within the Building Lifecycle Report submitted with this application.

In Table 9.8, operational GHG emissions have been compared against the carbon budget for the residential sector in 2030, against Ireland's total GHG emissions in 2022 and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO2e) (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 0.0008% of Ireland's total GHG emissions in 2023 and 0.0014% of Ireland's non-ETS 2030 emissions target. The total GHG emissions associated with residential-related activities are 0.0081% of the 2030 residential budget.

Figure 9-8 Estimated Operational GHG Emissions relative to Residential Budget and GHG Baseline

Target/Sectoral Budget (tCO_2e)		**Sector Annualised Proposed Development GHG Emissions are Compared**	**Annualised Proposed Development GHG Emissions as % of Relevant Target/Budget**
Ireland's 2023 Total GHG Emissions (existing baseline)	58,829,000	Total GHG Emissions	0.0008%
Non-ETS 2030 Target	33,000,000	Total GHG Emissions	0.0014%

(Residential Sector) 2030 Sectoral Budget	5,753,000	Total Industry Emissions	0.0081%

9.10.3 GHGA Significance of Effects

The TII guidance (2022) states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 9.10 has been taken into account when determining the significance of the Proposed Development's construction and operational GHG emissions. According to the ISEP significance criteria described in Section 9.6.3.4 and Section 9.1, the significance of the GHG emissions during the construction and operational phase is minor adverse.

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is **direct, long-term, negative and slight, which is overall not significant.**

9.10.4 Climate Change Risk Assessment

9.10.4.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 9.6.4.5, which state that there are no residual medium or high-risk vulnerabilities to climate change hazards and therefore a detailed CCRA is not required. However, consideration has been given to the Proposed Development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 9.11:

- Flood risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow;
- Geotechnical impacts; and
- Major Storm Damage – including wind damage.

9.10.4.2 Operational Phase

To assess the vulnerability of the Proposed Development to climate change, it is essential to first evaluate the development's sensitivity and exposure to various climate hazards i.e. climate screening. The following climate hazards have been analysed in relation to the Proposed Development: flooding (coastal, pluvial, and fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides, and fog.

The sensitivity of the Proposed Development to these climate hazards is evaluated independently of its location. Section 9.9 provides a sensitivity assessment of the Proposed Development, rated on a scale from high (3) to medium (2) to low (1). After establishing sensitivity, the exposure of the Proposed Development to each climate hazard is determined, reflecting the likelihood of these hazards occurring at the project site, also rated on a scale of high (3), medium (2), and low (1). The overall vulnerability of the Proposed Development to each climate hazard is then calculated by multiplying sensitivity and exposure, as outlined in Section 9.9. This is the initial climate change screening prior to more detailed analysis utilising Climatics climate modelling.

Table 9-9 Climate Change Vulnerability Assessment/Screening

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	2 (Medium)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	1 (Low)	1 (Low)
Extreme Cold	1 (Low)	1 (Low)	1 (Low)
Wildfire	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Landslides	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area were assessed using various online tools such as Met Éireann's TRANSLATE tools, Climate Ireland – Climate Change Projection Maps, and DNV's Climatics multi-climate hazard analysis tool in addition to the project teams subject matter expertise. The analysis concluded that the Proposed Development has no significant vulnerabilities to the identified climate hazards, as outlined below. All identified vulnerabilities are classified as low. As a result, there are no residual medium or high-risk vulnerabilities related to climate change hazards, making a detailed Climate Change Risk Assessment (CCRA) unnecessary.

The Site-Specific Flood Risk Assessment (SSFRA) conducted by KilGallen & Partners indicates that the site is located within Flood Zone A & B. The primary flood risk for the Proposed Development is fluvial flooding, arising from potential overtopping of the stream during extreme rainfall events. Fluvial flooding occurs when rivers or streams overflow their banks due to heavy rainfall or blockages. However, the development is unlikely to be impacted by such flooding. The Catchment Flood Risk Assessment and Management (CFRAM) flood maps for the site confirm the presence of fluvial flood zones, but the proposed design includes compensatory flood storage, elevated building levels, and stream crossing upgrades to mitigate this risk. The Office of Public Works (OPW) Past Flood Events reports do not document any historical flooding directly on the site, although localized flooding has occurred in the surrounding area due to culvert blockages rather than insufficient system capacity.

Due to the predicted increase in the frequency and intensity of extreme rainfall events, it is prudent that site specific drainage and management measures aimed at mitigating the effects

of pluvial flooding are incorporated into the development design. The Proposed Development includes the construction of a surface water network which consists of Sustainable Urban Drainage Systems (SuDS) measures which will minimise the impact to the receiving environment and manage the pluvial flood risk at the site. The proposed surface water drainage network has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and the policies set out in the South Dublin County Council Development Plan 2022–2028. The system incorporates allowances for climate change and is engineered to accommodate peak rainfall flows, including a 1-in-100-year storm event with an additional 30% climate change factor. All runoff is managed below ground, ensuring that no flooding occurs on paved surfaces during design storm conditions.

The correct operation and maintenance of the drainage system is necessary to reduce the risk of human or mechanical error causing pluvial flood risk from blockage. The CFRAM mapping available for the site indicates that the pluvial flood risk to the development is low

Groundwater flooding occurs when the water table rises above the land surface, this means the natural underground drainage system is incapable of sufficiently draining itself, resulting in the emergence of groundwater at the surface. It generally requires sustained rainfall over relatively longer duration than other forms of flooding, its location is discontinuous, and they can last for weeks or months. The SSFRA has determined that the Proposed Development is not at risk of groundwater flooding.

Regarding wildfires, the Think Hazard! tool developed by the Global Facility for Disaster Reduction and Recovery classifies the wildfire hazard in the area as low. This classification suggests there is a 4% to 10% chance of weather conditions that could support a problematic wildfire in the project area, potentially causing disruptions and posing a low but real risk to life and property each year. Although future climate models predict an increase in conditions favourable to wildfires—such as higher temperatures and extended dry periods—the project's suburban location significantly reduces the wildfire risk. Therefore, the Proposed Development is considered to have a low vulnerability to wildfires.

According to the Landslide Susceptibility Map developed by Geological Survey Ireland (GSI), the Proposed Development Site ranges from Low to Moderately Low in terms of landslide susceptibility.

Extreme temperatures, whether extreme heat or cold, have the potential to affect building materials and associated infrastructure. During the detailed design stage, high-quality, durable, and resilient materials will be selected to withstand future temperature fluctuations due to climate change. Consequently, the Proposed Development is assessed to have, at most, low vulnerabilities to these climate hazards, and a detailed risk assessment is not necessary.

There is no additional vulnerability with respect to all climate hazards when design mitigation has been put in place in order to alleviate this known vulnerability to future climate change risk.

9.10.4.3 CCRA Significance of Effects

With the implementation of design mitigation measures, the Proposed Development faces no substantial risks from climate change. As outlined in the EPA Guidelines (EPA, 2022), the impacts of climate change on the development are considered **direct, long-term, negative**,

and **imperceptible**, and are therefore **not deemed significant** in terms of Environmental Impact Assessment (EIA).

9.10.5 Potential Cumulative Impacts

Regarding the requirement for a cumulative assessment, TII PE-ENV-01104 (2022) indicates that "since the GHG assessment pertains to global climate and the impacts on the receptor from a project are not geographically constrained, the typical approach for cumulative assessment in EIA is not deemed applicable." However, by evaluating the GHG impact of a project in relation to its alignment with Ireland's trajectory towards net zero and sectoral carbon budgets, this assessment will demonstrate the project's potential influence on Ireland's ability to meet its national carbon reduction targets. Consequently, the assessment approach is inherently cumulative.

In accordance with IEMA guidance, all GHG emissions are considered cumulatively significant as they contribute to global climate change. The assessment therefore quantifies the project's emissions, places them in the context of relevant carbon budgets, and identifies mitigation measures. For climate change risk assessment, the approach differs: it is a risk-based process focused on the project's resilience to future climate conditions rather than additive impacts. Cumulative assessment in the traditional sense is not generally applicable because climate risks are external drivers, not project-generated effects. However, potential cumulative effects related to climate have been considered within this EIA Chapter.

Cumulative impacts result from the combined effects of the Proposed Development alongside other existing or planned developments in the area. These impacts can intensify climate-related risks and environmental pressures, leading to more pronounced and widespread consequences. ISEP emphasises the importance of understanding these interactions to develop effective mitigation and adaptation strategies that align with broader sustainability objectives.

The cumulative assessment presented in this chapter is informed by the list of existing, permitted, and proposed developments outlined in Chapter 2 of this EIAR, which should be referred to for full details.

Greenhouse Gas (GHG) Emissions

As per ISEP's guidance on assessing climate change within EIAs (2022), the cumulative effect of GHG emissions from the Proposed Development, in conjunction with other developments, must be carefully evaluated. The aggregation of emissions across multiple projects can significantly contribute to global climate change, exacerbating the effects of rising temperatures, more frequent extreme weather events, and changes in precipitation patterns. To address this, we have identified robust mitigation measures aimed at reducing the development's carbon footprint, ensuring alignment with regional and national climate targets, and adhering to the principles of the EU Taxonomy and Near Zero Energy Building (NZEB) standards. Nearby emissions sources include commercial and residential buildings as well as vehicles.

Water Resources and Flooding

ISEP (2022) stresses the importance of considering cumulative impacts on water resources, particularly with respect to flood risks and water availability. The combined effect of increased rainfall due to climate change and additional impermeable surfaces from multiple developments can overwhelm existing drainage infrastructure, leading to a higher frequency and severity of flooding events. This underscores the need for integrated water management strategies that enhance the resilience of water systems and incorporate climate adaptation measures, such as sustainable urban drainage systems (SUDS), as recommended within the site-specific flood risk assessment.

Biodiversity and Habitat Loss

Cumulative impacts on biodiversity are another significant concern. ISEP guidance (2022) highlights that climate change, coupled with habitat loss from multiple developments, can lead to more severe impacts on ecosystems and species. The fragmentation of habitats and disruption of ecological networks can accelerate species decline and reduce ecosystem resilience. To mitigate these impacts, the EIA should incorporate strategies for habitat conservation, restoration, and connectivity, ensuring that biodiversity is protected and enhanced in the face of cumulative pressures.

Air Quality and Human Health

ISEP also advises considering the cumulative impacts on air quality and human health. Increased emissions from multiple developments can lead to higher concentrations of pollutants, exacerbating climate change-related health risks, such as respiratory conditions and heat-related illnesses. The EIA should ensure that air quality management plans are in place and that mitigation measures are designed to minimise emissions, particularly in urban areas where cumulative impacts are more likely to be significant.

Soil Degradation and Erosion

Cumulative impacts on soil degradation and erosion are another area of concern highlighted by ISEP. The combined effects of climate change-induced extreme weather events and land disturbance from construction activities can lead to accelerated soil erosion, reduced fertility, and increased sedimentation in water bodies. Sustainable land management practices, including erosion control measures and soil conservation techniques, should be integrated into the development to mitigate these cumulative impacts.

Infrastructure and Energy Demand

Finally, ISEP's guidance emphasises the importance of considering the cumulative impacts on infrastructure and energy demand. As multiple developments increase the demand for energy, there is a risk of overloading local grids and increasing reliance on fossil fuels, which could exacerbate GHG emissions and climate change. The Proposed Development does promote energy efficiency, the use of renewable energy sources, and the integration of smart grid technologies to ensure that infrastructure can accommodate future energy needs without compromising climate goals.

9.10.6 Mitigation and Monitoring

In accordance with ISEP guidance (2022), addressing cumulative impacts requires a comprehensive approach that includes effective mitigation strategies and ongoing monitoring. These strategies should focus on enhancing energy efficiency, reducing GHG emissions, protecting natural habitats, managing water resources sustainably, and ensuring resilient infrastructure. Continuous monitoring and adaptive management will be essential to identify cumulative impacts early and to adjust mitigation measures as necessary to minimise long-term environmental and climate-related risks.

By considering cumulative impacts within the climate chapter of the EIA, we ensure a thorough and responsible assessment that aligns with ISEP's best practices, contributing to the sustainability and resilience of both the Proposed Development and the broader environment.

9.10.7 "Do Nothing" Impact

Under the Do-Nothing Scenario no construction works will take place and the previously identified impacts of carbon emissions from equipment, machinery and development operation will not occur. Therefore, this scenario can be considered neutral in terms of climate.

9.11 Avoidance, Remedial & Mitigation Measures

9.11.1 Construction Phase

9.11.1.1 Climate Resilience Avoidance, Remedial & Mitigation Measures

During the construction stage specific climate resilience measures should focus on ensuring durability, water management, and energy efficiency while mitigating risks associated with extreme weather. Regarding the development's resilience to climate change, the Contractor will be required to mitigate the effects of extreme weather, such as heavy rainfall, flooding, windstorms, and temperature fluctuations, through site risk assessments and method statements.

Here are key Avoidance, Remedial & Mitigation Measures:

Foundation & Site Preparation

- Flood Resilient Foundations: Use raised foundations, elevated platforms, or piling where necessary in flood-prone areas.
- Sustainable Drainage Installation: Implement permeable surfaces, drainage channels, and attenuation tanks early in construction.
- Soil Stabilisation: Prevent erosion with silt fences, geotextiles, and retaining structures to withstand heavy rainfall.

Structural Reinforcement

- Wind-Resistant Framing: Use reinforced concrete or steel frames with proper anchoring to withstand storms.

- Secure Roof Fixings: Ensure hurricane straps, reinforced trusses, and mechanically fixed roof tiles to prevent wind damage.
- Impact-Resistant Windows & Doors: Install reinforced glass or shutters to reduce storm-related damage.

Water & Moisture Management

- Damp-Proofing Measures: Use high-quality damp-proof membranes (DPM) and damp-proof courses (DPC) in walls and floors.
- Proper Drainage on Site: Ensure temporary drainage solutions (e.g., trenches, sumps) to manage rainwater during construction.
- Weatherproofing Structures: Apply breathable but water-resistant membranes on external walls before cladding installation.

Material Selection & Handling

- Use Climate-Resilient Materials: Opt for treated timber, marine-grade plywood, concrete with low permeability, and corrosion-resistant steel.
- Storage & Protection of Materials: Keep materials covered and off the ground to prevent water damage or degradation.
- Low-Carbon Concrete & Insulation: Use alternatives like GGBS (Ground Granulated Blast-furnace Slag) concrete and eco-friendly insulation.

Energy Efficiency & Passive Design Implementation

- High-Performance Insulation Installation: Ensure proper fitting to avoid thermal bridging and moisture ingress.
- Airtightness Testing During Construction: Conduct interim blower door tests before final finishes to confirm air sealing effectiveness.
- Green Roof Base Layers: Install waterproofing and root barriers early if a green roof is part of the design.

On-Site Climate Adaptation Measures

- Construction Scheduling Considerations: Plan for extreme weather events, avoiding major excavation or external works in heavy rain seasons.
- Cold/Hot Weather Plan: Strategies such as planned road gritting, thermal protection, chemical accelerants, temporary enclosures, and alternative heating/cooling solutions enable builders to overcome these obstacles and achieve successful project outcomes.
- Temporary Wind & Rain Barriers: Use tarpaulins, scaffolding covers, and temporary roofing to protect partially built structures.
- Emergency Power Supply: Have generators or battery backups on site to maintain critical construction processes.

9.11.1.2 GHG Resilience Avoidance, Remedial & Mitigation Measures

Embodied carbon of materials and construction activities is the primary source of climate impacts during the construction phase. Further pre-construction carbon Avoidance, Remedial & Mitigation Measures include:

Design for Performance

- Request a Design for Performance approach from design teams and contractors.
- Include contractual targets for whole life carbon with a focus on Net Zero and nature-positive goals where possible.

Circularity in Design

- Require design teams to develop a circularity concept for projects, focusing on adaptability, disassembly, and reuse.
- Set a target for a percentage of reused and recycled materials in designs.

Building Lifecycle Report

- Ensure the building lifecycle report is regularly reviewed and updated in line with current policy and best practice for sustainable construction.

Carbon Literacy

- Develop carbon literacy within design and construction teams by providing training on carbon literacy, ESG reporting, and disclosure.
- Incorporate sustainability and carbon considerations into site team talks, construction targets, and reporting.
- Include training clauses for contractors and sub-contractors to upskill their teams in low-energy construction techniques.

Building Renovation Passports (BRPs)

- Request Building Renovation Passports for this asset as part of the roadmap to decarbonise each asset.

Cement Reduction

- Specify the minimum amount of cement needed in concrete and substitute where feasible to reduce cement usage.

Sustainable Procurement

- Review sustainable procurement and material choices during detailed design to identify and implement lower embodied carbon options.
- Request Environmental Product Declarations (EPDs) and prefer products with EPDs where possible within procurement restrictions.
- Drive demand for EPDs by increasing the percentage of products used in the project with EPDs.

European Framework for Sustainable Buildings

- Commit to using key indicators from the European Framework for sustainable buildings, Level(s), with support from the IGBC.
- Focus on indicators such as Life Cycle Assessment (LCA), Life Cycle Cost (LCC), Indoor Air Quality (IAQ), and Circularity.

Energy and Carbon Performance Reporting

- Plan to disclose the operational energy and carbon performance of the project in your annual reporting.

Post-Occupancy Evaluation

- Allow for post-occupancy evaluation of completed developments to ensure feedback is passed to the design team.

Demolition and Construction Waste Management

- Create a demolition and construction programme allowing sufficient time to determine reuse and recycling opportunities for demolition waste.
- Appoint a competent demolition contractor to undertake a pre-demolition audit detailing resource recovery best practice and identifying materials for reuse and recycling.
- Reuse materials on site in the new build areas where possible.

EU Taxonomy Compliance

- Commit to complying with EU taxonomy requirements on the circular economy, specifically reuse, recycling, and material recovery of demolition and construction waste.
- Review and ensure compliance with the EU Taxonomy Regulation (EU) 2020/852 regarding circular economy practices for demolition and construction waste.

Local Material Sourcing

- Source materials locally where possible to reduce transport-related CO2 emissions.

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- **Energy-Efficient Equipment**: Deploy modern, low-emission or electric machinery. Maintain equipment regularly to ensure optimal performance and reduced fuel use.
- **Renewable Energy**: Use renewable sources, such as solar panels or battery units, to power site operations where feasible.
- **Reduce Idling**: Enforce a no-idling policy for all vehicles and machinery to cut unnecessary emissions.
- **Sustainability Awareness**: Include carbon reduction in site inductions, toolbox talks, and reporting. Provide training for contractors and appoint sustainability champions to lead on-site initiatives.
- **Sustainable Transportation**: Promote carpooling, public transport, and electric vehicle use among site workers.

- **Monitoring and Reporting**: Track site emissions through fuel and energy use. Conduct regular checks and share findings to ensure compliance and continuous improvement.
- **Maintenance**: Keep all plant and machinery in good working order through scheduled inspections and servicing.
- **Waste Management**: Apply the waste hierarchy to reduce, reuse, and recycle materials. Avoid over-ordering and manage waste through a Construction and Demolition Waste Management Plan.
- **Sustainable Procurement**: Source low-carbon, locally available materials with environmental certifications to reduce embodied emissions.

9.11.2 Operational Phase

A number of measures have been incorporated into the design of the development in order to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the Proposed Development to climate change (see Section 9.7.3).

The Proposed Development has been designed to reduce the impact on climate as a result of energy usage during operation. The Energy Report prepared by BBSC and building lifecycle report prepared by MCORM Architecture and Urban Design and submitted under separate cover with this planning application details a number of incorporated design mitigation measures included in the development to reduce the impact on climate wherever possible.

Such measures included in the Proposed Development to reduce the impact to climate from energy usage are:

- The development is designed to comply with the Near Zero Energy Building (NZEB) standards, in accordance with Part L (2021) of the Building Regulations.
- A Building Energy Rating (BER) of A2/A3 is targeted for all dwellings, with energy performance assessed using the SEAI DEAP methodology.
- The development incorporates high-performance building fabric, including low U-values, improved air permeability, and minimized thermal bridging, to reduce heat loss and improve energy efficiency.
- Renewable energy technologies, including photovoltaic (PV) solar panels and air source heat pumps, are planned to meet the renewable energy contribution required under Part L.
- All internal and external lighting will utilize energy-efficient LED luminaires, with automatic controls such as motion sensors in common areas to enhance efficiency.
- Mechanical ventilation systems, including heat recovery ventilation (MVHR), are considered to improve indoor air quality while minimizing energy use.
- No fossil fuel-based heating systems will be used; instead, electric air source heat pumps will provide space and water heating.
- Occupants will receive a comprehensive Home User Guide with information on building systems, appliances, and energy-saving features to support informed and efficient operation of their homes.

In addition, electric vehicle and bicycle parking will be provided within the development which will promote the use of more sustainable modes of transport and reduce potential transport emissions. Full descriptions of the measures proposed and their benefits are outlined within the Building Lifecycle Report submitted with this application.

9.11.3 "Worst Case" Scenario

Worst case estimates have been used as part of this assessment. As a result, Section 9.11 details the worst-case impact for the Proposed Development.

9.12 Residual Impacts

The Proposed Development will result in some impacts to climate through the release of GHGs. ISEP (2022) state that the crux of assessing significance is "not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050". The Proposed Development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible, the development will comply with the do-minimum standards set through regulation (NZEB and Part L 2021). As per the assessment criteria in section 9.6.4.4 the impact of the Proposed Development in relation to GHG emissions is considered **long-term, minor adverse and not significant.**

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the Proposed Development as a result of climate change

9.13 Monitoring

9.13.1 Construction Phase

We recommend the following monitoring strategies to ensure compliance with the environmental objectives outlined in this EIA. These strategies are essential for effectively managing the environmental impacts associated with the demolition and construction phases, with a particular focus on resource recovery, waste management, and the reduction of GHG emissions.

Monitoring of Demolition Waste Reuse and Recycling

To optimise the reuse and recycling of demolition materials, we recommend implementing the following:

- Material Reuse Tracking System: A digital tracking system could be established to monitor materials identified for reuse or recycling. This system will log details such as quantities, conditions, and intended applications within the new construction areas. It is important that this system is regularly updated to reflect ongoing recovery efforts.
- Weekly Progress Reports: It is suggested that the demolition contractor be required to submit weekly progress reports. These reports should provide detailed metrics on the volumes of materials recovered, reused, and recycled, alongside any challenges encountered. This approach will allow for the early identification of issues and timely adjustments to the recovery plan.

- Regular On-Site Inspections: It is suggested that regular inspections are conducted to verify that materials earmarked for reuse are being properly stored and handled. These inspections should ensure that materials remain in suitable condition for their intended use in the new build areas.

Competency and Performance of Demolition Contractor

To ensure that the demolition process aligns with the project's environmental goals, we propose the following monitoring measures:

- Verification of Pre-Demolition Audit: The pre-demolition audit conducted by the appointed contractor should be thoroughly reviewed to confirm that all materials and components suitable for reuse or recycling have been accurately identified. This review will ensure that the audit reflects best practice in resource recovery.
- Periodic Contractor Performance Reviews: We suggest conducting periodic performance reviews of the demolition contractor. These reviews should focus on their adherence to the resource recovery plan, the accuracy of material identification, and their overall compliance with project timelines without compromising environmental standards.

Compliance with EU Taxonomy for Circular Economy

Given the project's commitment to meeting EU taxonomy requirements, we recommend the following:

- Comprehensive Documentation and Reporting: It is essential to maintain detailed records that document compliance with the circular economy principles outlined in the EU taxonomy. This documentation should include logs of all recycled materials, percentages of materials reused on-site, and detailed descriptions of how circular economy practices are being implemented.
- Independent Third-Party Audits: It is suggested that an independent auditor is engaged to periodically assess the project's compliance with the EU taxonomy. The audit should verify the accuracy of reported data and ensure that the circular economy requirements are fully adhered to throughout the project.

Monitoring of GHG Emissions Reduction Measures

To mitigate the project's impact on climate change, the following monitoring activities are proposed:

- Appoint sustainability champions to ensure that the project continues to perform in a sustainable manner including monitoring and reporting of performance on site.
- Idle Time Monitoring for Vehicles and Machinery: It is suggested that GPS or telematics systems are installed on all vehicles and machinery used on-site to monitor engine idling times. Automatic alerts should be set up to notify site managers when idling exceeds a specified threshold, enabling prompt corrective action to reduce unnecessary emissions.
- Maintenance Logs for Plant and Machinery: Implementing a digital maintenance log system to track the inspection and maintenance of all on-site equipment is recommended. This system should record inspection dates, maintenance activities,

and any identified issues, ensuring that all machinery operates efficiently and with minimal emissions.

- Material Waste Minimisation Tracking: A monitoring system should be developed to track material orders and usage. This system should identify trends in over-ordering or inefficient material use, enabling the project team to take corrective actions that will help minimise the embodied carbon footprint of the site.

Application of Waste Hierarchy

To optimise waste management on-site, the following monitoring protocols are suggested:

- Waste Segregation Audits: Regular audits should be conducted to ensure that waste is being properly segregated according to the waste hierarchy (reduce, reuse, recycle). These audits will help identify opportunities for improving waste management practices and reducing overall waste generation.
- Monthly Waste Management Reports: It is suggested that monthly reports are generated detailing the volume of waste reduced, reused, and recycled. These reports should be compared against predefined targets to assess the effectiveness of the waste management strategies and to identify areas for improvement.

Local Sourcing of Materials

To reduce transport-related emissions and support local suppliers, the following measures are suggested:

- Supplier Distance Monitoring: A database of suppliers should be developed, documenting the distance of each supplier from the construction site. This database should be used to monitor and minimise the carbon footprint associated with material transportation, prioritising local suppliers wherever possible.
- Transport-Related Carbon Footprint Analysis: Conducting a carbon footprint analysis for the transportation of all materials to the site is recommended. This analysis should inform the selection of suppliers, with a preference for those within a closer radius to reduce CO2 emissions.

These monitoring recommendations are designed to ensure that the project adheres to its environmental commitments, particularly in the areas of resource recovery, waste management, and greenhouse gas emissions reduction. By implementing these strategies, the project will not only comply with regulatory requirements but also contribute to broader environmental sustainability goals. Regular reporting, on-site inspections, and third-party audits will be critical to maintaining compliance and achieving the desired environmental outcomes.

9.13.2 Operational Phase

Environmental Management Plan that incorporates adaptive management principles.

Ensure climate change resilience plans are robust; continued monitoring of trends in weather events; and continued review of resilience measures related to interdependencies.

We recommend the following monitoring strategies to ensure that the Proposed Development meets its environmental objectives. These strategies focus on mitigating the impacts of climate change, enhancing energy efficiency, and promoting sustainable transport, all of which are aligned with best practices outlined in ISEP guidelines.

Monitoring of Climate Change Mitigation Measures

- **Attenuation and Drainage Systems Monitoring**: Consistent with ISEP's guidance on climate resilience, regular inspections should be undertaken to verify the functionality of the attenuation and drainage systems. These inspections should be conducted during construction, after significant rainfall events, and periodically thereafter to ensure long-term effectiveness in preventing flooding.
- **Climate Vulnerability Assessment Review**: In accordance with ISEP's recommendation to periodically reassess climate risks, we suggest reviewing the climate vulnerability assessment (as detailed in Section 9.7.3) at regular intervals. This review should incorporate the latest climate projections to ensure the mitigation measures remain adequate and effective.

Monitoring of Energy Efficiency and Climate Impact Reduction

To minimise the impact of the development on climate through energy use during operation, the following monitoring activities are recommended:

- **NZEB Compliance Verification**: Continuous monitoring during the construction phase should ensure that the development complies with the Near Zero Energy Building (NZEB) Standards. This includes verifying that all building components and systems meet the NZEB criteria.
- **EU Taxonomy Alignment Monitoring**: Ensure that the development achieves energy performance that is at least 10% lower than the NZEB requirements. Regular energy performance assessments should be conducted to confirm alignment with the EU Taxonomy for sustainable development.
- **Renewable Energy Ratio (RER) Compliance**: Monitor the implementation of renewable energy systems, such as solar panels and air source heat pumps, to ensure that the development achieves a Renewable Energy Ratio (RER) of 20%, in line with Part L (2021) of the NZEB regulations. Post-installation, periodic checks should be performed to verify ongoing compliance.
- **Building Energy Rating (BER) Target Achievement**: Regular energy audits should be carried out to monitor the building's energy performance, ensuring that the targeted Building Energy Rating (BER) of A2/A3 is achieved. This includes verifying the efficiency of insulation, windows, HVAC systems, and other energy-related components.
- **Thermal Performance Monitoring**: Continuous monitoring during construction should ensure that the building achieves the improved thermal transmittance (U-Values), air permeability, and thermal bridging standards specified in the design. Post-construction thermal imaging surveys and air tightness tests should be conducted to confirm that these standards have been met.

Monitoring of Renewable Energy Systems

To ensure the successful implementation and operation of renewable energy systems, the following monitoring measures are recommended:

- **Air Source Heat Pump Performance**: Regular inspections and maintenance checks should be conducted on the air source heat pumps to ensure they are operating efficiently and contributing effectively to the building's energy needs. Performance metrics such as Coefficient of Performance (COP) and Seasonal Performance Factor (SPF) should be tracked and compared against the expected values.
- **Occupant Sustainability Information**: Consistent with ISEP's emphasis on stakeholder engagement, it is important to ensure that all building occupants receive comprehensive sustainability information. This should include guidance on energy conservation practices and how to use renewable energy systems effectively. Feedback mechanisms, such as surveys, should be used to assess the impact of this information on occupant behaviour.

Monitoring of Sustainable Transport Initiatives

To promote sustainable transport and reduce transport-related emissions, the following monitoring strategies are suggested:

- **Electric Vehicle (EV) and Bicycle Parking Usage**: Regular monitoring should be carried out to assess the usage of electric vehicle charging stations and bicycle parking facilities within the development. This will help gauge the effectiveness of these measures in promoting sustainable transport modes. Usage data can inform whether additional facilities or adjustments are needed.
- **Transport Emissions Impact Assessment**: Periodic assessments should be conducted to evaluate the impact of the provided sustainable transport facilities on reducing overall transport emissions. This could include monitoring the uptake of electric vehicles by residents and the corresponding reduction in GHG emissions.

These monitoring recommendations are designed to ensure that the development's climate change mitigation measures, energy efficiency initiatives, and sustainable transport provisions are effectively implemented and maintained throughout the lifecycle of the project. By adhering to these strategies, the development will not only comply with relevant regulatory requirements but also contribute to broader environmental sustainability goals. Regular inspections, energy performance assessments, and occupant engagement will be crucial to achieving the desired environmental outcomes.

9.14 Interactions

Climate interactions with various environmental topics are extensive and significant, highlighting the broad effect of climate factors across different aspects of the environment. The "avoidance, remediation and mitigation" section of this chapter outlines effective management and reduction measures for the following identified interactions.

One of the most critical interactions is between climate and GHG emissions The Proposed Development's carbon footprint, including emissions from construction and operational activities, energy use, and transportation, plays a role in influencing climate change. Effective

management and reduction measures for these emissions are outlined in the mitigation section to support climate resilience and regulatory compliance.

Population and Human Health

Human health and well-being are closely linked to climate factors. Climate change can exacerbate health issues such as heat stress, respiratory conditions, and vector-borne diseases. While the Population and Human Health chapter focuses on direct health determinants, the Climate Chapter also considers indirect pathways through which climate-related measures may influence public health. These include:

- Air quality impacts from construction and operational traffic, which are addressed in parallel with climate assessment;
- Noise and vibration disturbance, particularly in relation to sensitive receptors such as residential dwellings;
- Green infrastructure and landscaping, which contribute to urban cooling, improved air quality, and enhanced amenity;
- SuDS and water management systems, which reduce flood risk and associated health hazards; and
- Traffic emissions, which were assessed using DMRB LA 114 criteria and scoped out for both construction and operational phases, confirming no significant climate-related health effects

These measures support climate resilience and help safeguard public health in the context of a changing climate.

Biodiversity

Climate change can alter habitat conditions, encourage spread of invasive species, disrupt species distributions, and affect ecological balances. These shifts may impact local flora and fauna, particularly in sensitive coastal and estuarine environments adjacent to the Proposed Development.

The Biodiversity chapter outlines a suite of mitigation and enhancement measures that directly support climate resilience, including:

- Planting of native tree and hedgerow species selected for their adaptability to changing climatic conditions;
- Integration of green infrastructure such as permeable paving, green walls, and pollinator-friendly planting to support ecosystem services;
- Sustainable drainage systems (SuDS) to manage water quality and quantity; and
- Lighting design to reduce disturbance to nocturnal species.
- Long-term habitat management, including for the prevention of the introduction and spread of invasive species.
- Biodiversity measures listed above and included within the biodiversity chapter align with national and EU climate adaptation strategies, contributing to broader goals such as carbon neutrality, nature-based solutions, and ecosystem-based adaptation. Such strategies include:

- CAP25 explicitly supports a transition to a biodiversity-rich, climate-resilient, and environmentally sustainable economy
- National Adaptation Framework (NAF) 2025, which identifies biodiversity as a priority sector for climate adaptation, promotes ecosystem-based adaptation and nature-based solutions to address climate risks such as flooding, drought, and habitat loss, and encourages local and sectoral adaptation plans to integrate biodiversity and climate resilience.
- EU Adaptation Strategy (2021 Update) which emphasizes nature-based solutions (NbS) as a key cross-cutting priority. Supports ecosystem restoration, urban greening, and coastal protection as climate adaptation tools, and promotes integration of NbS into urban planning, water management, and disaster risk reduction.
- EU Biodiversity Strategy 2030 which aims to restore at least 30% of degraded ecosystems by 2030. Recognizes biodiversity as essential for climate mitigation and adaptation, and supports green infrastructure and ecological connectivity to enhance resilience.

These measures contribute to carbon sequestration, urban cooling, and ecological connectivity, enhancing the site's resilience to climate change and supporting long-term biodiversity conservation.

Land and Soils

Climate change can affect soil moisture, erosion rates, and land productivity. Increased rainfall may lead to soil erosion, while extended dry periods can degrade soil quality. The Proposed Development includes mitigation measures to manage these risks.

Site investigations confirmed that soils across the Proposed Development site are of medium sensitivity and are underlain by tills and brown earths, with no evidence of anthropogenic contamination. Laboratory testing found that concentrations of heavy metals, PAHs, and other substances were below detection limits and within inert waste acceptance criteria. As such, excavation is not required for remediation purposes but is necessary to achieve formation levels for roads, services, and building foundations.

The Hydrological and Hydrogeological Risk Assessment Report (DNV, 2025) estimates that approximately 184,442 m³ of soil, stones, clay, and made ground will be excavated to facilitate construction. Where possible, it is intended for suitable soil to be reused onsite, while it is estimated that 103,689 m³ of surplus material will be removed offsite for appropriate reuse, recovery, recycling, or disposal in accordance with relevant waste legislation and permitting requirements.

To mitigate risks associated with soil disturbance, the Proposed Development includes a suite of soil management measures. These include designated stockpile areas, segregation of reusable and waste materials, sampling before reuse, and controls to prevent pollution from construction materials such as cement or fuels. With these measures in place, residual effects on land, soils, and geology during both construction and operation are assessed as imperceptible and non-significant.

The Construction Environmental Management Plan (CEMP) outlines procedures for managing soil stockpiles, preventing dust generation, and controlling runoff, all of which are critical in the context of climate variability.

No significant adverse effects are anticipated during the operational phase, and the site will be suitable for long-term residential and commercial use.

Hydrology and Hydrogeology

Climate variability, such as increased rainfall or prolonged droughts, can affect water availability, quality, and management practices. This includes effects on stormwater runoff, flood risk, and water supply. The Hydrology Chapter sets out a detailed water-management strategy, including multi-catchment SuDS with treatment and attenuation sized for 2-, 30-, and 100-year storm events (with a 20% climate-change allowance), petrol interceptors, and compensatory flood-storage measures, ensuring the development does not increase off-site flood risk and that residual hydrological impacts remain imperceptible.

Air Quality

Air quality and climate are interrelated due to shared sources of emissions, particularly from the combustion of fossil fuels during both the demolition/construction and operational phases. These activities generate pollutants that contribute to both local air quality impacts and global climate change. The air quality assessment was undertaken in parallel with the climate assessment to ensure consistency in evaluating emissions and their potential impacts.

Material Assets: Waste and Utilities

The Proposed Development has been designed in accordance with relevant building design standards, including those governing the provision of electricity, water, gas, and telecommunications. Sustainable power and heat sources have been incorporated into the design to reduce reliance on imported fossil fuels and lower greenhouse gas (GHG) emissions. These design choices represent a direct and indirect interaction with climate and are assessed in this chapter.

Archaeology and Cultural Heritage

Cultural heritage sites are at risk due to climate change, with increased weathering, flooding, and temperature fluctuations potentially accelerating their deterioration. Mitigation measures employed at the Proposed Development will ensure that no significant impacts occur.

Traffic

Traffic-related emissions are a key contributor to climate change. The UK Highways Agency's DMRB guidance document LA 114 (2019) outlines criteria for determining whether a detailed climate assessment is required. These include:

- A change of more than 10% in Annual Average Daily Traffic (AADT);
- A change of more than 10% in the number of heavy-duty vehicles; or
- A change in daily average speed of more than 20 km/hr

These criteria were applied to both the construction and operational phases of the Proposed Development. For the construction phase, the assessment presented in Chapter 14: Traffic (2025) confirms that peak traffic volumes generated during construction will remain below the 30% uplift threshold defined in IEMA guidance, with all studied links showing increases of less than 20%. With embedded mitigation measures, including haul-route scheduling, access controls, and a Construction Traffic Management Plan, no significant traffic-related effects are anticipated during the construction phase.

For the operational phase, traffic modelling undertaken for the EIAR indicates that no road link or junction within the study area will experience a traffic uplift exceeding 10% in the Opening Year (2032) or Design Year (2032), in line with TII protocols. This modelling, which incorporates cumulative impacts from nearby permitted and proposed developments, confirms that the surrounding network will continue to operate effectively and safely.

As such, no significant traffic or transport effects are anticipated during the operational phase, and the Proposed Development is expected to integrate sustainably with the existing transport infrastructure.

In summary, the Proposed Development's interactions with climate encompass a range of factors including GHG emissions, water resources, biodiversity, soil, human health, and cultural heritage. Effective mitigation strategies and robust monitoring will be essential to address these interactions, minimise adverse effects, and ensure the development's resilience to climate change.

9.15 Difficulties Encountered When Compiling

Overall, there were no major difficulties encountered when compiling this assessment. Minor difficulties were encountered during the quantification of materials at the design stage in order to assess the embodied construction carbon. The exact volumes of materials, location of waste disposal sites, sourcing of products and technical specification for materials are finalised during the detailed design phase and by the appointed contractor. Throughout the assessment, efforts have been made to provide the most likely scenario of the embodied carbon assessment. Where it is required to make assumptions as the basis of the assessment presented here, these assumptions are based on advice from competent project designers and are clearly outlined within the chapter.

This is a standard and expected approach at this early stage, and assessment is appropriate on this basis. It is also important to frame these assessments in light of recent findings from the Housing Agency's report, 'Embodied Carbon and The Climate Impact of our Housing,' (2025) which highlights the significant role of embodied carbon in the built environment and underscores the need for comprehensive climate considerations throughout the entire lifecycle of housing developments.

9.16 Conclusion

The assessment of potential adverse effects resulting from the Proposed Development on climate change in this chapter has identified the potential sources of greenhouse gas emissions and vulnerability of the site to climate change.

It is reasonably considered that following all mitigation measures including design embedded and prescribed, adequate implementation of construction phase mitigation, and adherence to

operational best practice that no significant effects to climate change will arise from the Proposed Development during the construction or operational phases.

Additionally, the operational and maintenance plan for the Proposed Development and the prescribed energy strategy will provide enhancement to energy efficiency over the long term.

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10 NOISE AND VIBRATION

10.1 Introduction

This chapter of the EIAR provides a description and assessment of the likely effect of the Proposed Development from noise and vibration.

This chapter discusses the existing ambient noise levels at nearby sensitive receptors, the potential effects of the Proposed Development on the existing ambient noise environment and the mitigation measures that will be employed to reduce or eliminate any potential effects.

This assessment will examine the likely effects of sound pressure levels generated by the Proposed Development located north of the Boherboy Road, approximately 2km south-west of Tallaght Town Centre, 1.1Km east of Saggart, 700m south-west of Citywest Shopping Centre and 1.6Km south of the N7. Noise calculations have been used to predict and assess the likely effect of operations on noise sensitive receptors.

10.1.1 Quality Assurance and Competency of Experts

This chapter of the EIAR has been prepared by Wave Dynamics Limited (hereinafter referred to as 'WDA') an Acoustic Consultancy specialising in noise and vibration. The EIAR chapter was prepared by Cathal Reck, Acoustic Consultant. Cathal has experience of numerous similar planning stage EIAR noise and vibration assessments. Cathal holds a BSc (Hons) in Music Technology and Production, Institute of Acoustics (IOA) Certificate of Competence in Environmental Noise Measurement and a Certificate in Building Acoustics and Noise Control. Cathal is a member of the Institute of Acoustics (TechIOA) and a (SITRI) Sound Insulation Testing Register certified sound insulation tester.

This chapter was peer reviewed by James Cousins, Managing Director and Principal Consultant with WDA who has 14 year's industry experience in assessing noise and vibration from road and rail infrastructure on commercial and residential developments. James is an experienced consultant. His qualifications include a BSc (Hons) in Construction Management and Engineering, Pg Cert in Construction Law and Diploma in Acoustics and Noise Control (Institute of Acoustics) and an IOA Competence Cert in Building Acoustic Measurements. James is a member of both Engineers Ireland (MIEI) and the Institute of Acoustics (MIOA) and is the current SITRI Chairman.

10.2 Study Methodology

The assessment of noise and vibration effects associated with the Proposed Development has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out within the relevant sections of this chapter. In addition to specific noise guidance documents, the following guidelines were considered and consulted for the purposes of this chapter:

- Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);
- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings;

- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;
- BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration;
- BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration;
- ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;
- ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels;
- ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere;
- ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation;
- British Standard BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings;
- Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities;
- BS 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound;
- Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004;
- ProPG 2017 Professional Practice Guidance on Planning & Noise;
- AAAC: Licensed Premises Noise Assessment Technical Guideline;
- NRA Traffic Grid Flow Pattern;
- ISO 9613-2: 1996 (Parkplatzlarmstudio 2007);
- Calculation of Road Traffic Noise (CoRTN): 1998;
- S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations 2018 (hereafter referred to as the Noise Regulations);
- S.I. No. 241/2006 - European Communities Noise Emission by Equipment for Use Outdoors (Amendment) Regulations 2006;
- WHO Environmental Noise Guidelines (2019).
- South Dublin County Council County Development Plan, 2022-2028.
- Dublin Agglomeration Noise Action Plan 2024-2028

The noise and vibration study has been undertaken using the following methodology:

- A baseline environmental noise survey has been undertaken on, and in the vicinity of, the Proposed Development site in order to characterise the existing baseline noise environment and to assess the character of the existing noise;
- 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;
- Predictive statistical calculations have been performed for during the construction phase of the project at the nearest sensitive locations to the Proposed Development site;

- Predictive modelling using SoundPlan 9.1 and statistical calculations have been performed to assess the potential effects associated with the operational phase of the Proposed Development at the most sensitive locations surrounding the Proposed Development site; and
- Mitigation measures have been proposed to reduce, where necessary, the identified potential outward effects relating to noise and vibration from the Proposed Development.

10.3 The Existing and Receiving Environment (Baseline Situation)

A baseline noise survey was conducted to assess the baseline noise situation at the Proposed Development site located to the north of the Boherboy Road, Corbally, Dublin 24. The purpose of the survey was to quantify the existing noise environment to predict its effect on the future occupants of the Proposed Development.

An attended and unattended noise survey was conducted to quantify the existing noise environment. The attended measurement survey also included measurements across the site for calibration of the distance attenuation calculations and noise model. The unattended noise measurements were undertaken on the 29th of January 2025 at 13:30hrs and collected on the 5th of February 2025 at 10:30hrs, attended measurements were taken on the 29th of January 2025 and the 5th and 6th of February 2025, to capture the noise climate during both the daytime and nighttime periods under normal operating conditions.

10.3.1 Site Description and Measurement Locations

The site is located to the north of Boherboy Road, approximately 2Km south-west of Tallaght Town Centre, 1.km east of Saggart, 700m south-west of Citywest Shopping Centre and 1.6km south of the N7. The site is bounded by residential dwellings to the north and east. The areas to the west and south are predominantly undeveloped, agricultural lands. Three streams cross the site. These include the Corbally Stream, the Cooldown Stream and the Coldwater Stream. There are also a number of hedgerows running both around the edges of the site as well as through the site itself. Figure 10-1 outlines the site location, measurement location and noise sensitive locations in the surrounding area.

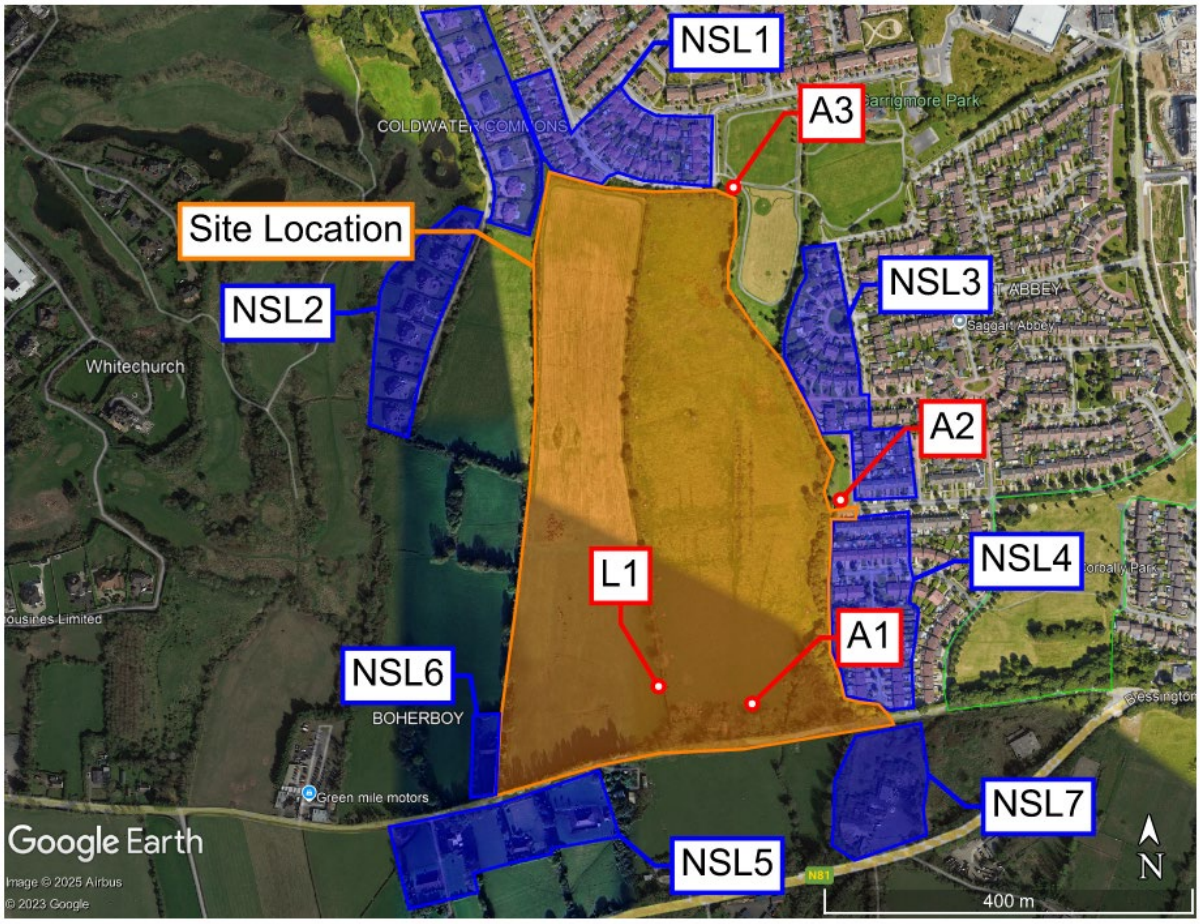

Figure 10-1: Site Location, Measurement Locations L1, A1-A3, and Noise Sensitive Locations (NSLs) 1-7.

10.3.2 Survey Methodology and Personnel

The attended and unattended surveys were completed by Daniel Cousins (Operations Manager).

The unattended noise measurements were taken from the 29th of January 2025 at 13:30hrs and collected on the 5th of February 2025 at 10:30hrs

The attended noise measurements took place on the 29th of January 2025 and the 5th and 6th of February 2025.

10.3.2.1 Measurement Locations

This section outlines the chosen measurement locations and justification for the chosen measurement locations.

L1:

Unattended noise measurements were performed at location L1. This site was selected because it offered a secure point to mount the noise logger, mitigating the risk of theft or damage. Additionally, it accurately represents the facades most exposed to noise from the surrounding road traffic.

A1:

Attended noise measurements were undertaken at location A1 to establish baseline noise levels. The data was used to determine background noise levels in the vicinity of sensitive receptors NSL4 and NSL7. Furthermore, the noise model was calibrated with these measurements to enhance the accuracy of predicted noise levels from existing road traffic on the proposed development.

A2:

Attended measurements were undertaken at location A2 to establish the baseline noise levels. The data was used to determine background noise levels in the vicinity of sensitive receptors NSL3 and NSL4. Furthermore, the noise model was calibrated with these measurements to enhance the accuracy of predicted noise levels from existing road traffic on the proposed development.

A3:

Attended measurements were undertaken at location A3 to establish the baseline noise levels. The data was used to determine background noise levels in the vicinity of sensitive receptors NSL1, NSL2 and NSL3. Furthermore, the noise model was calibrated with these measurements to enhance the accuracy of predicted noise levels from existing road traffic on the proposed development.

10.3.2.2 Unattended Noise Measurements

An unattended noise logger was deployed in location L1 in general accordance with ISO 1996-1:2016 using ISO Class 1 sound analysers. The monitor was deployed on the 29th of January 2025 at 13:30hrs and collected on the 5th of February 2025 at 10:30hrs. The logger was anchored to the ground and placed on a tripod positioned approximately 1.5m above the ground as outlined in Figure 10-2. The logger was calibrated before and after the measurements and no significant drift was noted. Measurements were filtered for periods of unsuitable weather conditions (where appropriate).

Figure 10-2 Unattended Noise Measurement Setup

10.3.2.3 Attended Noise Measurements

Noise measurements were undertaken in general accordance with ISO 1996-1:2016 using ISO Class 1 sound analysers. Attended measurements were taken for a duration of 15-60 minutes in the locations A1-A3 and L1 as illustrated in Figure 10-1.

Care was taken to avoid any effect on the measurement of extraneous noise, acoustic vibration, or interference. During the attended noise measurements, the sound level meter was positioned at approximately 1.5m above the ground level as outlined in Figure 10-3. The weather conditions were calm (wind less than 5m/s) with no rain, a wind shield was used for the duration of the attended surveys. The noise logger was calibrated before and after the survey and no significant drift was noted.

Figure 10-3: Attended noise measurement setup.

10.3.3 Survey Period

The attended noise measurement survey was undertaken on the 29th of January 2025 and the 5th and 6th of February 2025. The unattended survey took place from 29th of January 2025 at 13:30hrs and collected on the 5th of February 2025 at 10:30hrs

10.3.4 Subjective Noise Environment

During the attended survey the following noise sources were noted:

- Passing road traffic,
- Overhead aircraft,
- Birdsong,

10.3.5 Noise Measurement Equipment

A Class 1 sound level meter/noise logger in general accordance with IEC 61672-1:2013 was used for the attended and unattended measurements. Table 10-1 summarises the measurement equipment used.

Table 10-1 Noise Measurement Equipment Used for the Attended and Unattended Surveys.

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Sound Level Meter	SLM2	Nor 140	1406532	UCRT25/2495	20/10/2027
Sound Level Meter	SLM7	Nor 140	1405924	48183	25/06/2026
Calibrator	CAL4	Larson Davis CAL200	21085	AC250309	22/07/2026

10.3.6 Noise Measurement Results

Attended measurements were taken to measure the existing noise climate in the area. This section outlines the results of both the attended and unattended noise measurements.

10.3.6.1 Attended Measurement Results

Table 10-2 illustrates the results of the attended noise measurement survey conducted on the 29th of January 2025 and the 5th and 6th of February 2025.

Table 10-2 Attended Measurement Results

Measurement				Measurement Noise Levels		
Location	**Date**	**Time (hrs)**	**Duration (mins)**	**L_{Aeq} dB**	**L_{AFmax} dB**	**L_{A90} dB**
L1	29/01/2025	12:53	15:00	54	64	48
A1	29/01/2025	13:28	15:00	53	62	48
A2	29/01/2025	13:52	15:00	49	60	47
A3	29/01/2025	14:21	15:00	51	68	48
A1	06/02/2025	10:13	15:00	54	65	48
L1	06/02/2025	10:58	15:00	54	69	46
A2	06/02/2025	11:44	15:00	47	61	44
A3	06/02/2025	12:25	15:00	47	58	43

10.3.6.2 Sound Exposure Levels (SEL)

This section outlines the instances where aircraft were recorded passing over the Proposed Development site, measurement results are outlined in Table 10-3.

Table 10-3 Sound Exposure Measurement Results

Aircraft Model	Date	Location	Time (hrs)	Duration (Seconds)	L_{Aeq} dB	L_{AFmax} dB	SEL dB
--	29/01/2025	L1	12:37	12	61	68	72

Aircraft Model	Date	Location	Time (hrs)	Duration (Seconds)	L_{Aeq} dB	L_{AFmax} dB	SEL dB
--	06/02/2025	A1	10:30	11	54	60	64
IDF Helicopter	06/02/2025	L1	10:54	26	61	70	75
IDF Helicopter	06/02/2025	L1	10:58	21	57	64	70
--	06/02/2025	A3	12:24	35	53	61	68

10.3.6.3 Unattended Noise Measurement Results

Table 10-4 outlines the results of noise measurements at the unattended monitoring location L1. A full breakdown of all of the unattended measurement results are provided in Volume III, Appendix 10-1.

Table 10-4 Unattended Measurement Results

Start Date	$L_{Aeq,16hour}$ (07:00 – 23:00) dB	L_{night} ($L_{Aeq,8hour}$ 23:00 – 07:00)(1) dB	L_{den} (00:00 – 00:00) dB	10th highest night-time L_{AFmax} dB	L_{A90} (23:00 – 07:00)(2) dB
30/01/2025	54 (1)	50	56 (1)	62	43
31/01/2025	56	51	58	62	45
01/02/2025	55	45	58	62	35
02/02/2025	54	46	56	62	36
03/02/2025	53	47	55	63	40
03/02/2025	56	53	57	69	46
04/02/2025	57	50	60	63	43
05/02/2025	57 (1)	N/A	60 (1)	N/A	N/A

1) Shortened measurement duration i.e the unattended measurements were started at 10:15hrs and not 07:00hrs, resulting in a full period (day/night) not being recorded.
2) Where night-time period is referred to, the date is the date the measurement commenced on at 23:00hrs and finished at 07:00hrs on the following calendar day.

10.3.6.4 Discussion of Measurement Results

The unattended noise measurements were taken over weekend and weekday periods to establish the existing noise conditions within the boundary of the Proposed Development site at different periods. The attended measurements were taken in the surrounding area to establish the surrounding noise climate. The ambient noise consisted of traffic noise from the docks and local roads in the surrounding area as well as overhead aircraft movements at various stages of the monitoring period.

10.3.7 Weather Conditions for Monitoring Period

Good weather conditions were noted in general during the deployment and collection during the attended survey, with winds of less than 5 m/s and no rain for the attended surveys. Weather conditions during the unattended noise survey were taken from Met Eireann historic weather data archives, the historic weather data during the unattended noise survey were observed to be of calm wind conditions less than 5 m/s and little to no rainfall for the duration of the survey period.

10.4 Characteristics of the Proposed Development

A comprehensive description of the Proposed Development is presented in Chapter 2 of this EIAR.

10.5 Potential Impact of the Proposed Development

This section outlines the potential impact of the Proposed Development on the surrounding environment for the short-term construction phase and long-term operational phase of the development.

10.5.1 Description of Likely Significant Effects

The construction of the proposed development will be a multi-phase process with the potential to generate noise and vibration that could affect nearby receptors. The likely significant effects will arise from the use of heavy machinery and construction activities during these periods.

Table 10-5 Summary of Construction Phase Effects Pre Mitigation

Quality	Significance	Duration	Type
Neutral	Slight – Moderate, Moderate to Significant[1]	Temporary	Noise
Neutral	Slight	Temporary	Vibration

1) The significance is predicted to be slight – moderate at the majority of noise sensitive locations. Some locations are predicted to be moderate – significant for some stages of the construction (pre-mitigation).

10.5.2 Construction Phase

10.5.2.1 Construction Phase Noise

Dublin Agglomeration plan has not outlined specific construction noise limits within the Dublin Agglomeration Noise Action Plan 2024 – 2028, therefore, noise limits outlined in BS5228-1:2009+A1 have been adopted as the criteria for the Proposed Development as BS5228-1:2009+A1 is the defacto standard for assessing construction noise. BS5228-1 takes into consideration the effect of the ambient noise at the noise sensitive receptor as follows in Table 10-6:

Table 10-6 BS5228 Threshold Levels

Assessment category and threshold value period	Threshold value, in decibels (dB) (L_{Aeq})		
	Category A [1]	Category B [2]	Category C [3]
Daytime (07:00 – 19:00) and Saturdays (07:00 – 14:00)	65	70	75
Evenings and weekends [4]	55	60	65
Night-time (23:00 – 07:00)	45	50	55

1) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
2) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.
3) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category B values.
4) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sunday

BS5228 defines a noise sensitive location as:

"any occupied premises outside a site used as a dwelling (including gardens), place of worship, education establishment, hospital or similar institution, or any other property likely to be adversely affected by an increase in noise level".

10.5.2.1.1 Construction Phase Noise Limits

This section outlines the predicted construction noise and vibration effect of the Proposed Development on the surrounding sensitive locations.

The criteria for the Proposed Development are based on the criteria outlined in Table 10-6 and the background noise in the area. The construction noise criteria are outlined in Table 10-7, with distance to the NSLs based on the closest receiver at each NSL. NSL reflects a number of houses/sensitive receivers at each NSL.

Reference is made to the baseline survey results and guidance contained in BS 5228-1, which sets threshold levels for significant effects from construction activities. These thresholds are applied to the closest NSLs.

Table 10-7 Construction Noise Limits

Noise Sensitive Location	Distance to the Centre of the Site (m) [2]	Ambient Noise dB(A) L_{eq}	Noise Limit dB(A) L_{eq} [1]
NSL1	300	51	65
NSL2	300	51	65
NSL3	160	49	65
NSL4	190	54	65
NSL5	340	54	65
NSL6	370	54	65
NSL7	415	54	65

1) 65 dB (A) lower threshold limit.
2) Distance taken from the centre of the closest construction area to each NSL, based on current site layout drawings.
3) Blocks A and B assessed as NSL's for construction phase 2.

For the relevant assessment period (i.e. daytime in this instance due to the nature of construction working hours) the ambient noise level is determined and rounded to the nearest 5dB. If the noise generated by construction activities exceeds the appropriate category value, then a significant effect is deemed to occur.

10.5.2.1.2 Noise Predictions

Construction noise for the site has been predicted based on the information provided. A summary of the expected equipment, noise levels and operating times are provided in Table 10-8. The development will be constructed using a phased approach as outlined in Figure 10-4, the construction noise impact assessment has been broken down to specific phases to account for the dynamic movement and relocation of works throughout the phased construction.

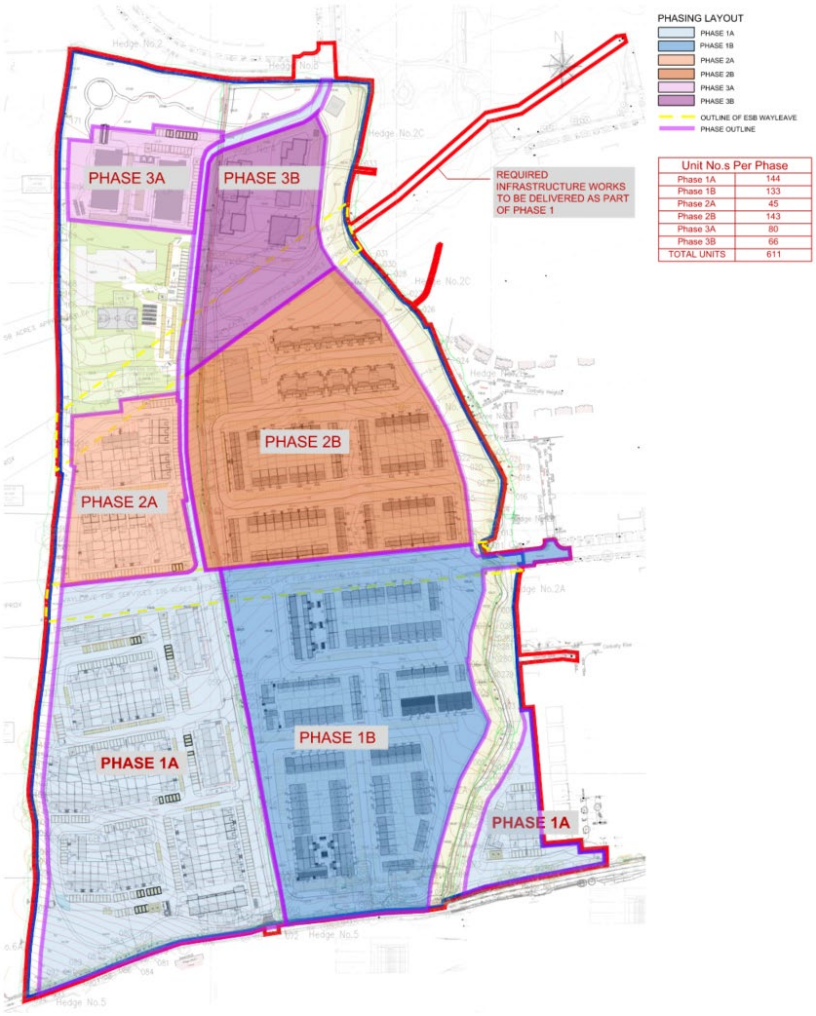

Figure 10-4: Phased Construction Approach.

As the works are transient the location of the works has been taken as an average location as is outlined in BS5228-1:2009+A1. The prediction methodology in BS 5228 has been used to calculate the noise level over a typical day for each of the main construction stages.

The closest noise sensitive receptors are outlined in Figure 10-1.

Table 10-8 Proposed Demolition and Construction Equipment, Noise Levels, and Durations

Construction Phase	Item of Plant (BS 5228-1:2009+A1:2014 Ref)	Noise Level (L_{Aeq} at 10m dB(A))	On Time of a 10 hr day
Site Setup	Digger	77	6 Hours
	Carpentry tools	78	5 Hours
	Skill saw	84	3 Hours
Substructure	Excavators	77	5 Hours
	Con Saws	84	4 Hours
	Rail Saw	85	4 Hours

Construction Phase	Item of Plant (BS 5228-1:2009+A1:2014 Ref)	Noise Level (L_{Aeq} at 10m dB(A))	On Time of a 10 hr day
	Drills (Into Concrete)	89	3 Hours
	Dumper	81	5 Hours
	Cement Mixer (Discharging)	75	4 Hours
	Lorry Idling	80	2 Hours
	Telescopic Handler	71	6 Hours
	Cement Pump	78	4 Hours
Superstructure	Drills (Into Concrete)	89	6 Hours
	Power Tools	70	5 Hours
	Impact Steel	69	2 Hours
	Hammer	69	3 Hour
	Dumper	81	3 Hours
	Cement Mixer (Discharging)	75	4 Hours
	Lorry Idling	80	2 Hours
	Telescopic Handler	71	6 Hours
External Finishes	Hand Tools	70	6 Hours
	Power Tools	70	5 Hours
Internal Finishes	N/A	N/A	N/A

Table 10-9 summarises the predicted construction noise level at the NSLs. Examination of the results indicate the construction noise without mitigation is predicted to exceed the noise limits outlined in BS 5228-1:2009+A1 during all construction stages of the Proposed Development.

Table 10-9 Predicted Noise Levels Without Mitigation for Each Stage of Phase 1A.

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	52	55	53	51
NSL2	65	53	58	55	51
NSL3	65	47	56	53	49
NSL4	65	56	59	57	54
NSL5	65	58	64	62	55
NSL6	65	61	67	64	55

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL7	65	55	58	57	54

Table 10-10 Predicted Noise Levels Without Mitigation for Each Stage of Phase 1B.

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	53	56	54	51
NSL2	65	53	57	54	51
NSL3	65	54	62	59	50
NSL4	65	61	67	64	55
NSL5	65	55	59	57	54
NSL6	65	55	59	57	54
NSL7	65	56	59	57	54
Phase 1A	65	58	63	61	54

Table 10-11 Predicted Noise Levels Without Mitigation for Each Stage of Phase 2A.

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	53	58	56	51
NSL2	65	55	61	58	51
NSL3	65	51	59	56	49
NSL4	65	56	59	57	54
NSL5	65	55	58	56	54

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL6	65	56	59	57	54
NSL7	65	55	57	56	54
Phase 1A	65	58	64	61	54
Phase 1B	65	57	62	59	54

Table 10-12 Predicted Noise Levels Without Mitigation for Each Stage of Phase 2B.

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	54	59	56	51
NSL2	65	53	57	55	51
NSL3	65	58	66	63	51
NSL4	65	58	63	61	54
NSL5	65	55	57	56	54
NSL6	65	55	57	56	54
NSL7	65	55	57	56	54
Phase 1A	65	55	59	57	54
Phase 1B	65	57	62	59	54
Phase 2A	65	58	64	61	55

Table 10-13 Predicted Noise Levels Without Mitigation for Each Stage of Phase 3A.

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	62	69	66	54
NSL2	65	58	65	62	52
NSL3	65	52	60	57	50
NSL4	65	55	57	56	54
NSL5	65	54	56	55	54
NSL6	65	54	56	55	54
NSL7	65	54	56	55	54
Phase 1A	65	55	58	56	54
Phase 1B	65	54	57	56	54
Phase 2A	65	55	61	58	50
Phase 2B	65	54	60	58	50

Table 10-14 Predicted Noise Levels Without Mitigation for Each Stage of Phase 3B.

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	61	68	65	53
NSL2	65	54	59	57	51
NSL3	65	57	65	62	51
NSL4	65	55	58	57	54
NSL5	65	54	56	55	54
NSL6	65	54	56	55	54
NSL7	65	54	56	55	54
Phase 1A	65	55	57	56	54
Phase 1B	65	55	58	56	54

Location	Noise Limit dB (A)	Predicted noise level (construction noise + ambient) with no mitigation L_{Aeq}, dB			
		Site Set Up	Substructure	Superstructure	External Finishes
Phase 2A	65	55	62	59	50
Phase 2B	65	57	64	61	50
Phase 3A	65	64	71	68	55

The assessment considers distances measured from the centre of the nearest construction phase to each NSL. However, it is acknowledged that some construction activities will occur closer to the site boundaries, potentially resulting in higher noise levels at the sensitive receptors. Therefore, noise mitigation measures are recommended throughout all stages of construction to control noise and vibration emissions during the construction phase. A combination of the mitigation measures outlined in Section 10.6.1.1 shall be implemented to control construction noise levels at the NSLs.

10.5.2.1.3 Traffic from Construction Vehicles

This section outlines the potential noise effect from construction vehicles on the surrounding road network.

According to figures and information provided by Pinnacle Consulting Engineers, and outlined in Table 10-15 and Table 10-26 the traffic levels will not increase by more than 25% which would equate to an increase of 1dB in traffic noise levels. Therefore, there will be no additional noise effect from construction vehicles. Table 10-15 outlines the construction traffic and percentage impact on the existing road network detailed in Figure 10-5.

Table 10-15: Construction Traffic AADT Figures.

Construction					
Site	Trip Distribution	AADT (Do Nothing) 2030	Construction Flows	HGV	% Impact
1	0.00%	22628	0	0	0.00%
2	0.00%	8193	0	0	0.00%
3	0.00%	13529	0	0	0.00%
4	0.00%	14410	0	0	0.00%
5	100.00%	5218	810	81	15.52%
6	100.00%	15662	810	81	5.17%
7	100.00%	19825	810	81	4.09%

Construction					
Site	**Trip Distribution**	**AADT (Do Nothing) 2030**	**Construction Flows**	**HGV**	**% Impact**
8	0.00%	16376	0	0	0.00%

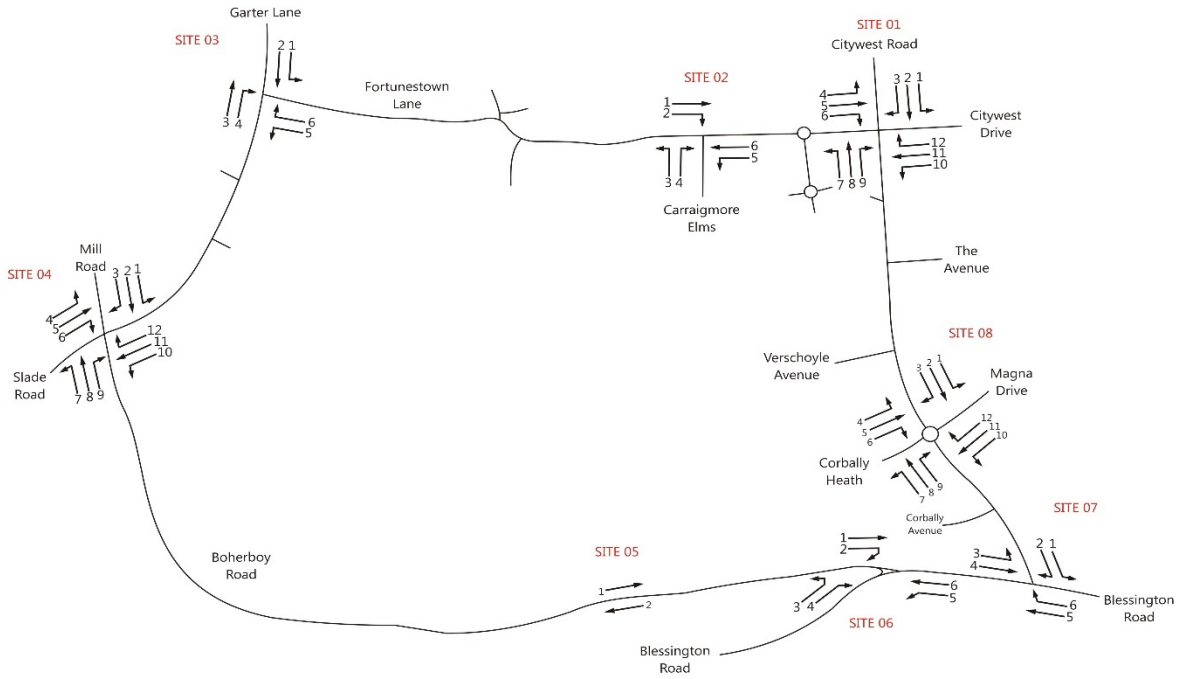

Figure 10-5: AADT Traffic Legend.

Table 10-16 outlines the magnitude of effects associated with changes in traffic noise levels.

Table 10-16 Magnitude of Effects

Noise Change, dB	Magnitude of Impact
0	No Change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

10.5.2.1.4 Conclusion of Unmitigated Noise Effects -Construction Phase

Based on the construction noise assessment, the Proposed Developments construction phase is expected to have a significant and temporary effect from on-site noise, as noise levels will

exceed project criteria without mitigation. This conclusion is based on a binary judgment of significance, acknowledging that while the effect is temporary, its magnitude requires a clear and definitive classification. Regarding construction traffic, the projected increase in vehicle usage is considered minimal and is not expected to cause a perceptible or significant increase in noise levels on the surrounding road network. To address the significant on-site noise and vibration impacts, mitigation measures developed and outlined in Section 10.6.1 will be incorporated into the Construction Environmental Management Plan (CEMP), detailing the necessary mitigation measures to ensure that the overall effects of construction are properly managed and reduced to acceptable levels. Table 10-17 outlines the summary of unmitigated construction phase noise effects.

Table 10-17 Summary of Construction Phase Effects Pre Mitigation

Quality	Significance	Duration	Type
Neutral	Significant	Temporary	Noise

10.5.2.2 Construction Phase – Vibration

The Dublin Agglomeration Noise Action Plan 2024-2028 does not contain guidance relating to vibration limits. Best practice guidance is taken from British Standard BS 5228:2009+A1 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 2 Vibration.

The standard recommends that for a soundly constructed residential property and similar structures (in good repair), the threshold for minor or cosmetic (i.e. non–structural) damage should be taken as a Peak Particle Velocity (PPV) (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration is outlined in Table 10-18:

Table 10-18 Allowable Vibration Limits

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:			
Building Type	**Less than 15Hz**	**15 to 40Hz**	**40Hz and above**
Light framed structures/ residential buildings	15 mm/s	20 mm/s	50 mm/s

10.5.2.2.1 Construction Vibration Predictions

Vibration effect is not anticipated for most of the construction stage, however some vibration is expected to be generated during the substructure stage where activities such as piling and earthworks are likely to occur. During this phase, compliance with vibration criteria is evaluated using a combination of measured data and general estimates, as predicting vibration effects over distance is challenging due to variations in soil composition and ground conditions. While precise predictions are difficult to achieve, general estimates based on measured vibration levels at specific distances, as outlined in BS 5228-2, provide a practical method for assessing potential effects, as outlined in Table 10-18.

10.5.2.2.2 Conclusion of Unmitigated Vibration Effects – Construction Phase

Based on the environmental assessment, the Proposed Developments construction phase is expected to have a temporary effect from on-site vibration. While the potential for vibration exists, the magnitude of these effects is not anticipated to reach a level that would be considered significant without mitigation. This conclusion is based on a binary judgment of significance—an effect is either significant, or it is not—and indicates that vibration is not a major concern for the Proposed Development. To address any potential nuisance from vibration, a Construction Environmental Management Plan (CEMP) will be implemented, detailing the necessary management measures to ensure that the overall effects of construction are properly managed and minimized. Table 10-19 outlines the summary of unmitigated construction phase vibration effects.

Table 10-19 Summary of Construction Phase Effects Pre Mitigation

Quality	Significance	Duration	Type
Neutral	Slight	Temporary	Vibration

10.5.3 Operational Phase

10.5.3.1 Operational Phase Noise Limits

The main potential source of operational noise from the Proposed Development is plant and equipment, traffic movements, car parking, crèche play area and external/public amenity spaces.

The Dublin Agglomeration Noise Action Plan 2024-2028 does not specify any operational noise limits, typically most councils define these in line with guidance from EPA NG4: Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities:

- Daytime 55 dB (A) L_{eq}; and
- Night-time 45 dB (A) L_{eq} (or exceptionally 40 dB (A) L_{eq}).

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 10-20 offers guidance as to the likely effect associated with any particular change in traffic noise level (Source: DMRB, 2011).

Table 10-20 Magnitude of Impacts

Noise Change, dB	Magnitude of Impact
0	No Change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

10.5.3.1.1 BS 4142: Methods for Rating and Assessing Industrial and Commercial Sound.

BS 4142 states that and exceedance of the noise source of the background noise by:

- +10 dB or more indicates that complaints are likely;
- + 5 dB is of marginal significance; and
- The rating level is more than 10 dB below the measured background noise level, then this is a positive indication that complaints are unlikely.

BS4142 outlines guidance for penalty corrections to be applied to the noise sources in question should the noise source have one of the following characteristics:

- The noise contains a distinguishable, discreet, continuous tone (whine, or hum);
- The noise contains distinct impulses (i.e. bangs);
- The noise is intermittent; or
- The noise is irregular.

10.5.3.1.2 EPA NG4: Guidance note to Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities.

EPA NG4 outlines that noise attributable solely to onsite activities from a licenced premises should not exceed the following limits:

- Daytime (07:00hrs – 19:00hrs) – 55dB $L_{Ar,T}$;
- Evening (19:00hrs – 23:00hrs) – 50dB $L_{Ar,T}$; and
- Nighttime (23:00hrs – 07:00hrs) – 45dB $L_{Aeq,T}$.

"During daytime and evening periods rigorous efforts should be made to avoid clearly audible tones and impulsive noise at all sensitive locations. A penalty of 5dB for tonal and/or impulsive elements is to be applied to the daytime and evening measured $L_{Aeq,T}$ values to determine the appropriate rating level ($L_{Ar,T}$). In all cases, an assessment by a competent person will be required.

During the night-time period no tonal or impulsive noise from the facility should be clearly audible or measurable at any NSL."

10.5.3.2 Operational Phase Inward Noise

10.5.3.2.1 ProPG: Professional Practice Guidance on Planning & Noise

ProPg 2017 is used to assess airborne noise from transport sources including road, rail and aircraft noise. The aim of the document is to provide a good design process which considers the internal acoustic environment at an early stage in the design process. The guidance was prepared by the Institute of Acoustics, the Association of Noise Consultants and the Chartered Institute of Environmental Health and is based on the findings by the World Health Organisation in relation to noise effect on humans. Its adoption is considered best practice for assessing the potential noise effect on the future occupants for residential developments.

The guidance is primarily designed for residential developments however it can be applied to other development types including developments where people require appropriate noise levels for rest and sleep. This includes residential care homes, hospitals etc. The guidance

advocates a holistic design process which considers the site, its location and likely suitability for the development at an early stage.

The two primary stages of the ProPG design approach are summarised as follows:

Stage 1 – The first stage is to undertake an initial high-level noise risk assessment of the proposed site considering the noise levels (measured and or predicted) to identify any noise risks. This would include consideration of the current noise environment, future use and future noise levels; and,

Stage 2 –The second stage is a full detailed assessment of the proposed development covering the “Four Key Elements”:

- “Good Acoustic Design Process,
- Internal Noise Level Guidelines,
- External Amenity Area Noise Assessment; and
- Assessment of Other Relevant Issues.”

Following the ProPg the following conclusions are recommended by ProPG in relation to the findings of the Acoustic Design Statement based one the recommendations of the Acoustic Consultant:

“Planning consent may be granted without any need for noise conditions;”

“Planning consent may be granted subject to the inclusion of suitable noise conditions; “

“Planning consent should be refused on noise grounds in order to avoid significant adverse effects (“avoid”); or, “

“Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (“prevent”).

Section 3 of the ProPG outlines the recommended approach decision makers should following in coming to their conclusions based on the recommendations of the Acoustic Design Statement. Figure 10-6 illustrates the ProPG approach.

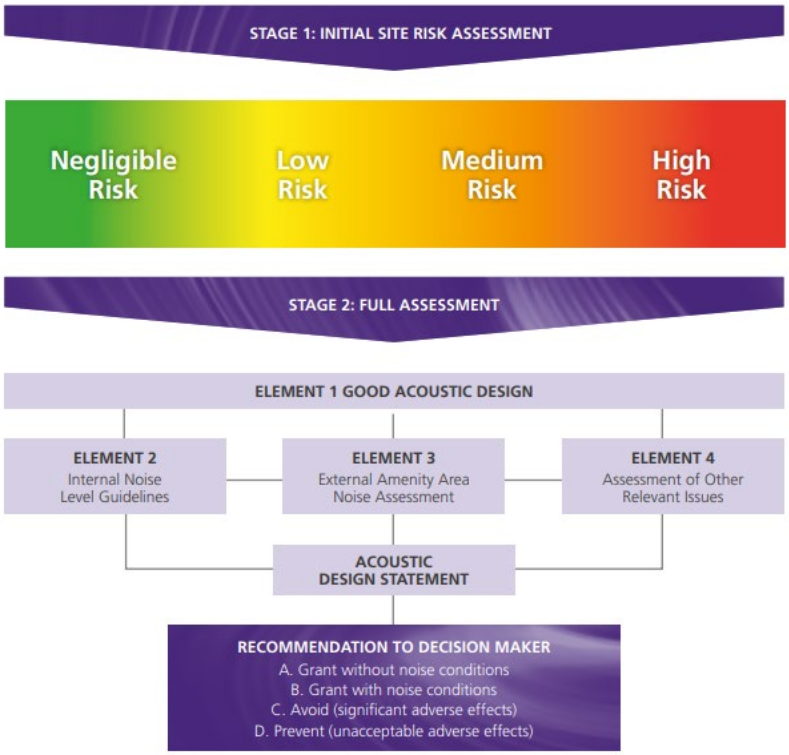

Figure 10-6: Summary of overall Propg approach

10.5.3.2.2 Internal Noise Levels

Table 10-21 below outlines the internal noise levels from BS 8233:2014 within living accommodation for residential buildings for dining, resting and sleeping. These limits are in line with the ProPG and the World Health Organisation Guidelines.

Table 10-21 BS 8233:2014 internal noise criteria –Residential Buildings

Activity	Location	07:00 to 23:00 Hrs	23:00 to 07:00 Hrs
Resting	Living Room	35 dB LAeq, 16 hour	-
Dining	Dining Room/Area	40 dB LAeq, 16 hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq, 16 hour	30 dB LAeq, 8 hour 45dB LAFmax[1]

[1] Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or LAmax,F, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB LAFmax more than 10 times a night

10.5.3.2.3 External Amenity Space Noise Levels

With regard to noise levels in external amenity spaces ProPG 2017 refers to the BS8233:2014 guidance which states that:

"the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB LAeq,16hr".

It also states that:

"These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited."

After mitigation/with mitigation if the adverse noise effect are still above the recommended noise levels they can be offset by providing an alternative amenity space to partially offset the noise effect by providing access to:

- *"a relatively quiet facade (containing openable windows to habitable rooms) or a relatively quiet externally ventilated space (i.e. an enclosed balcony) as part of their dwelling; and/or*
- *a relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or*
- *a relatively quiet, protected, nearby, external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or*
- *a relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations."*

BS 8233:2014 elaborates on this further, it acknowledges that it may not always be necessary or feasible to ensure that noise levels remain within the guideline values. In respect of gardens and patios, BS 8233:2014 states:

> *"however it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited."*

Both BS8233:2014 and ProPG 2017 do not advise that development should be restricted in areas with undesirable noise levels. The standards recommend that mitigation measures are put in place where practicable to achieve the recommended noise levels for the external amenity spaces. It notes that this may not be practical in all situations and local or governmental policy should take precedence in these situations.

10.5.3.3 Operational Noise - Predictions

This section outlines the predicted noise effect of the operational phase of the Proposed Development on the surrounding sensitive locations.

10.5.3.3.1 Plant Noise

Operational external mechanical plant and equipment associated with residential units has not yet been confirmed. In the absence of information regarding the operational plant at this planning stage the approach has been taken to determine suitable operational noise emission limits.

The closest NSL to the proposed development site is NSL5. The closest representative noise monitoring location to NSL 5 is noise monitoring location A2.

To be reflective of a worst-case scenario, the lowest LA90 measurements from the daytime LA90, 1hour (07:00-23:00) and night-time LA90, 15min (23:00-07:00) at noise monitoring location A2 have been used to determine suitable operational noise emission limits.

Table 10-22 contains the daytime and nighttime noise threshold limit to be adhered to for any plant and equipment noise from the proposed development at the nearest noise sensitive locations.

Table 10-22: Derived Noise Threshold Limits for Plant & Equipment Noise.

Noise Sensitive Location	Background Sound Levels LA90 dB	Penalty for Tonality dB(A)	Derived Noise Threshold Limit dB(A) Leq at Noise Sensitive Receptors
1	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35
2	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35
3	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35
4	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35
5	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35
6	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35

Noise Sensitive Location	Background Sound Levels LA90 dB	Penalty for Tonality dB(A)	Derived Noise Threshold Limit dB(A) Leq at Noise Sensitive Receptors
7	45 (Daytime)	TBC	45
	35 (Night-time)	TBC	35

At detailed design stage mitigation measures, if required, may need to be incorporated into the design of external mechanical plant and equipment if applicable.

10.5.3.3.2 Plant Noise - Unmitigated Noise Effects

The plant and equipment specification for the Proposed Development is not available at the time of writing and will be further developed at design development stage. This chapter and assessment outlines noise limits at the surrounding noise sensitive receptors that must be adhered to in order to remain in compliance with project criteria and to protect the existing amenity of the surrounding noise sensitive receptors.

Mitigation measures, if required, to control the noise emissions of any plant and equipment will be developed at design development stage once the final plant and equipment specification is known.

10.5.3.3.3 Crèche Play Area

The Proposed Development features a 2 storey crèche and associated play area to the north of the Proposed Development. Noise levels from the crèche play area during operation have been assessed based on measured noise levels from similar play areas and incorporated into the noise model. By leveraging data from a comparable environment, the assessment benefits from established baseline measurements which provide insight into typical acoustics properties of outdoor play areas.

In addition to the measured noise data, the crèche play area has been assigned an on-time in the model which assumes 3 hours of daily outdoor play for the crèche. Table 10-23 outlines the sound power spectrum used in the assessment.

Table 10-23 Play Area Sound Power Levels

Description	Octave Band Sound Power Level L_W dB at Centre Frequency (Hz)								Overall Sound Power Level L_{WA} dB
	63	125	250	500	1000	2000	4000	8000	
Measured play area noise levels	80	77	75	76	75	71	65	55	79

10.5.3.3.4 Creche Play-Area – Unmitigated Noise Effect

The operational noise from the crèche play area has been assessed using measured data from a similar environment. The noise model, which assumes three hours of daily outdoor play, indicates that the effects of the crèche will be neutral in quality and imperceptible in

significance. This is because the noise generated is comparable to typical background sounds and does not cause a noticeable change in the acoustic environment. The effect is likely to occur and will be permanent throughout the crèche's operational life. However, based on the assessment, the overall effect is concluded to be not significant.

10.5.3.3.5 External Amenity Space

This section outlines the external amenity noise levels used for the assessment. Guidance has been sought from Association of Australasian Acoustical Consultants (AAAC): Licensed Premises Noise Assessment Technical Guideline, V 2.0 for vocal noise spectrums and assessment parameters. The standard offers industry leading guidance on the assessment of groups of persons in various venues and scenarios. Table 10-24 outlines the vocal effort spectra used in the assessment in sound power format with each spectrum accounting for 2 persons speaking in a group of 6, this is in line with the AAAC guideline which assumes 1 in 3 persons speaking simultaneously.

Table 10-24 Patron Vocal Effort in Sound Power

Description	Octave Band Sound Power Level L_W dB at Centre Frequency (Hz)								Overall Sound Power Level L_{WA} dB
	63	125	250	500	1000	2000	4000	8000	
Normal Vocal Effort (Male)	56	58	67	69	63	59	55	50	69
Raised Vocal Effort (Male)	66	67	74	76	73	68	63	57	77

Occupancy of each external amenity space has been assumed for the purposes of the assessment. The assumed occupancy of each public open space is outlined in Table 10-25.

Table 10-25: Public and Communal Open Space Occupancy Figures.

Space	Occupancy (Persons)
POS 1	18
POS 2	24
POS 3	24
POS 4	32
POS 5	18
POS 6	18
POS 7	24
POS 8	18
POS 9	12
POS 10	6
POS 11	12
POS 12	6
Block B1-C1 COS	24
5 Storey Apt Block COS	18
Block A1 COS	12
Duplex Block B COS	12
Duplex Block A COS	6

10.5.3.3.6 External Amenity – Unmitigated Noise Effect

The assessment of external amenity noise has used established guidelines from the Association of Australasian Acoustical Consultants (AAAC) to model noise from groups of people. This assessment, which assumes a permanent and continuous effect, uses a vocal effort spectrum that accounts for two out of every six people speaking at any given time. While this effect is likely to occur, the quality of the noise is considered neutral and its significance is deemed imperceptible to the surrounding environment. As a result, the noise from the external amenity areas is concluded to be not significant.

10.5.3.3.7 Proposed School

The development allocated c. 1 Ha of land for a future school to inhabit. As part of the future planning application for the school it is recommended an operational noise impact assessment is conducted to assess the impact on the NSLs to ensure the amenity of the residents is protected.

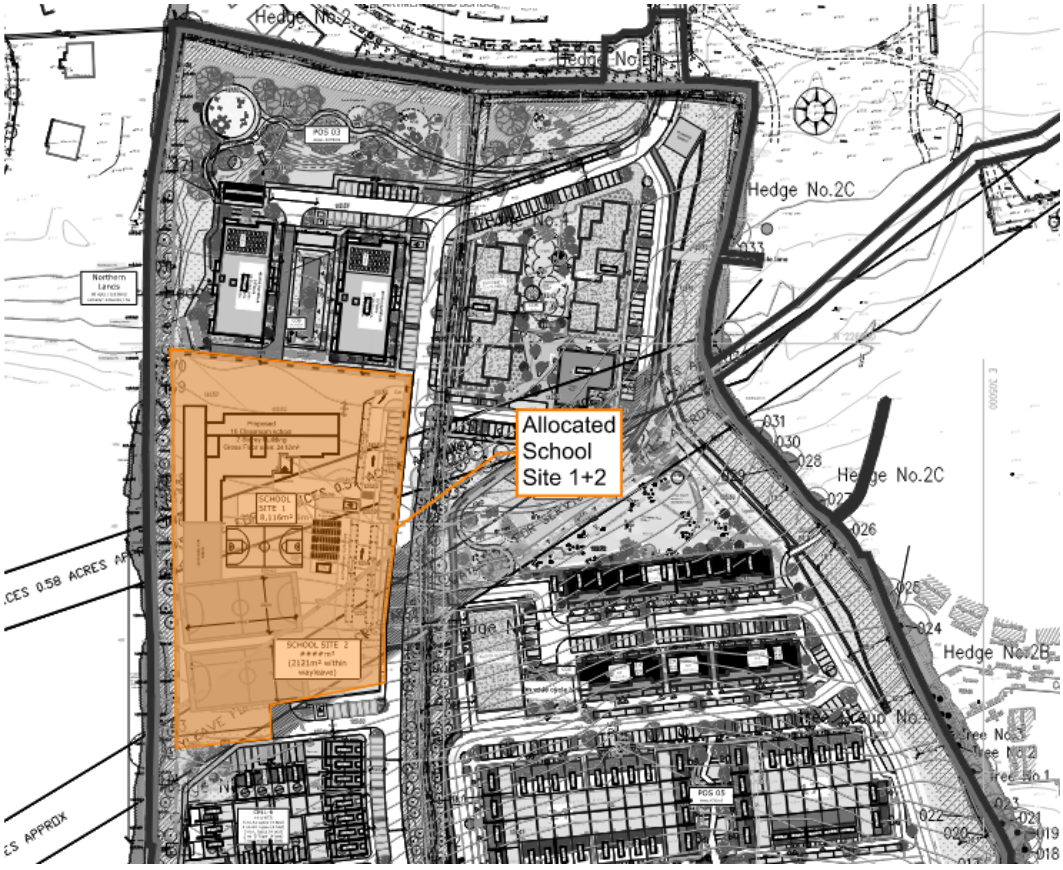

Figure 10-7 Proposed School Site 1 and Site 2 (Ref: 25.09.26_Boherboy Site Layout Plan 1-1000)

10.5.3.3.8 Operational Traffic

Operational phase traffic volumes have been provided by Pinnacle Consulting Engineers (2025) in Chapter 14: Material Assets: Traffic. Table 10-26 outlines the operational traffic volumes for the do-nothing scenario and development flows for the year 2032. Based on the percentage impact, the additional traffic generated by the development does not exceed and increase off 25% which would equate to a 1dB increase in noise levels due to traffic changes.

The additional traffic generated by the proposed development will not lead to a significant increase in noise or contribute to adverse noise impact on surrounding sensitive receptors.

Table 10-26 Operational Phase Traffic AADT Figures.

Site	Operational				
	Trip Distribution	AADT (Do Nothing) 2032	Development Flows	HGV	% Impact
1	16.72%	22841	1054	0	4.61%
2	21.53%	8270	1357	0	16.41%
3	4.81%	13657	303	0	2.22%
4	3.68%	14546	232	0	1.60%
5	6.81%	5267	429	0	8.15%
6	1.91%	15810	120	0	0.76%
7	12.27%	20012	773	0	3.86%
8	32.27%	16530	2034	0	12.30%

10.5.3.3.9 Operational Traffic Predictions

The Design Manual for Roads and Bridges (DMRB) states that a 25% increase in traffic flow typically results in an increase of approximately 1 dB(A) in road traffic noise levels, assuming all other variables remain constant. As shown in outlined in Table 10-26, projected traffic flow increases associated with the Proposed Development under the Development Flows section are all significantly below this threshold. The greatest increase is a 16.41% rise along link 2 further indicated in Figure 10-5, representing a worst-case scenario. All other links are subject to lower traffic increases and, consequently, lower associated noise impacts. Therefore, the predicted change in traffic noise levels across the study area is expected to be no greater than approximately 1 dB(A), which is generally considered barely perceptible and not significant under standard noise impact assessment criteria.

It is generally accepted that it takes an approximate 3dBA increase in noise levels to be perceptible to the average person (Ref: Planning Policy Guidance Note 24 PPG24 - Planning and Noise).

Traffic levels along the site access road are expected to increase substantially, as the baseline traffic levels recorded during the base year survey were very low. However, when compared to the traffic volumes on the surrounding road network, the increase from base year to the design year is expected to have a minimal effect on the overall noise levels in the surrounding area.

As such, operational traffic noise levels associated with the Proposed Development will not have a negative effect on NSLs.

Table 10-27 Magnitude of Change

Noise Change, dB	Magnitude of Impact
0	No Change

Noise Change, dB	Magnitude of Impact
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate
10+	Major

10.5.3.3.10 Operational Phase Traffic – Unmitigated Noise Effect

Based on the noise assessment, the predicted changes in operational traffic noise levels associated with the proposed development are concluded to be not significant. This determination is based on a number of factors. The worst-case scenario, a 16.41% increase in traffic along link 2, is expected to cause a change of less than 1 dB(A). This change is considered imperceptible to the average person, as it falls well below the 3 dB(A) increase typically required for human perception. Therefore, the effects are assessed as neutral in quality and imperceptible in significance. While these changes are likely to occur and will be permanent, their lack of a discernible impact means the overall conclusion is one of no significant effect.

10.5.3.3.11 Car Parking

The Proposed Development includes a significant number of car parking spaces for each dwelling and duplex block as well as road side parking for the apartment buildings.

The car parking has been incorporated into the assessment and will be of such short duration and low frequency as to not contribute significant noise effect on the surrounding noise sensitive receptors.

10.5.3.4 Daytime Noise Effect

As the Proposed Development has the potential to generate noise with different characteristics for both the daytime and night-time periods, a model has been undertaken for both the day and night-time operational situations of the Proposed Development. The operational noise assessment takes into consideration the specific sources operating on the development such the public and communal open spaces and crèche outdoor play area as indicated in Figure 10-8. Traffic and car parking has been assessed separately and found to not have any significant effect on the surrounding sensitive receptors as outlined in Section 10.5.3.3.9.4.7 and 10.5.2.4.8.

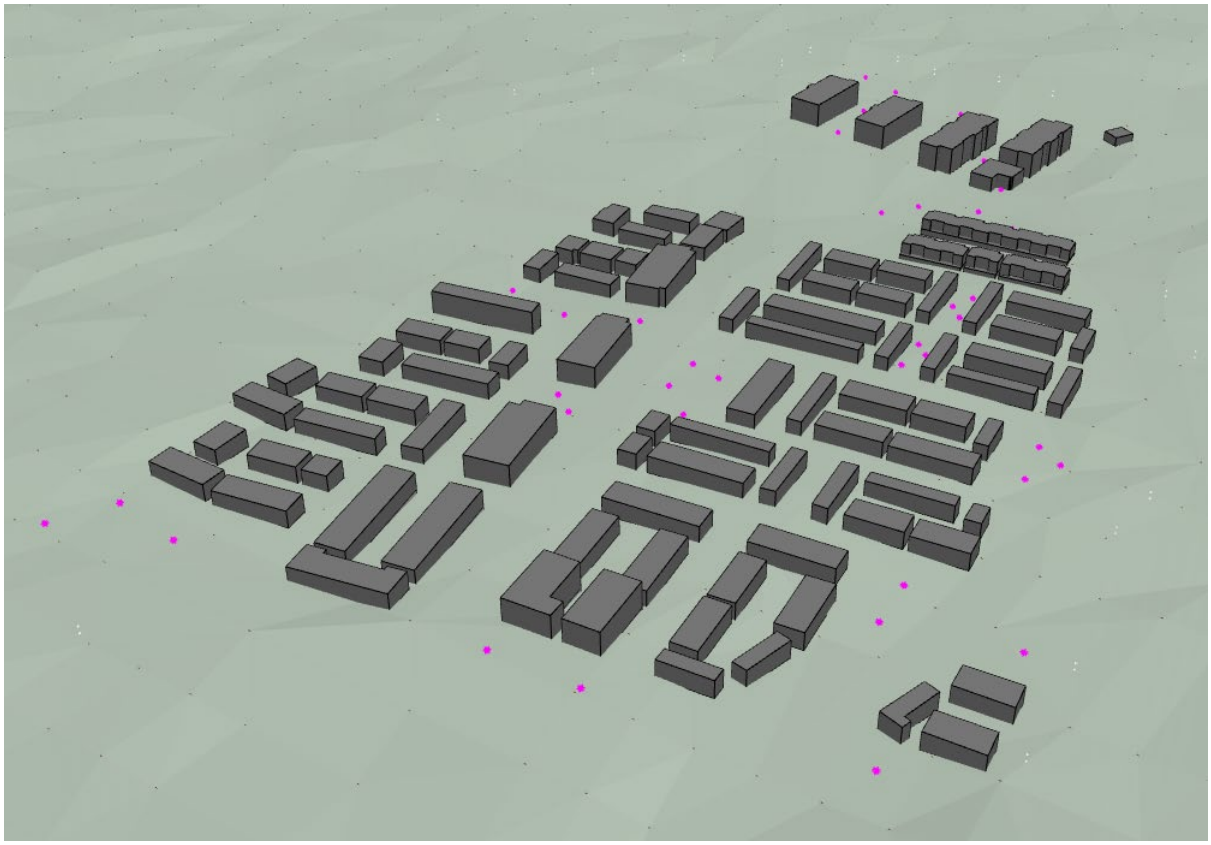

Figure 10-8 Screenshot of Model Displaying the Operational Phase Assessment

The daytime (07:00 – 23:00) situation assumes the following noise sources, the assumptions are based on similar other developments and WDAs experience:

- External amenity (POS and COS) operational from the hours of 16:00-23:00 based on persons speaking with normal vocal effort and occupancy as outlined in Section 10.5.3.3.5.
- Creche outdoor play area operational for 3 hours per day during the hours of 08:00-18:00.

10.5.3.4.1 BS 4142 Noise Effect Assessment (Daytime 07:00 – 23:00)

The noise effects at the nearest Noise Sensitive Locations (NSL1–NSL7) have been assessed in accordance with the methodology set out in BS 4142:2014+A1:2019, which provides a framework for assessing industrial and commercial sound in relation to background sound levels. In accordance with BS 4142, the daytime period is defined as 07:00 to 23:00 hours, and this time frame has been applied in the assessment of potential noise effects.

Table 10-28 outlines the assessment at the closest NSL (NSL7), which is the worst-case receptor due to its proximity to the Proposed Development. All NSLs have been assessed and are predicted to have lower onset noise levels than NSL4.

The residual and background noise levels were taken from the unattended logger positions and averaged across the entire measurement period; this is indicative of all typical noise climates in the surrounding area. In BS 4142, residual sound is defined as the ambient sound that remains when the specific sound under assessment is suppressed or removed.

Table 10-28 Noise Effect During Daytime Hours

Results		Relevant BS 4142 Clause	Commentary
Predicted specific sound level (daytime)	$L_{Aeq(60min)}$ = 31dB	7.3.6	As the Proposed Development is not yet existing, noise levels have been predicted using SoundPlan modelling software. Worst case specific sound predicted at NSL4.
Residual sound level (daytime)	$L_{Aeq(16,hour)}$ = 54dB	7.3.2	The residual sound level was dominated by road traffic noise on surrounding roads. Background noise from measurement location L1 was assessed as this is representative for worst case receptor NSL4.
Background sound level (daytime)	$L_{A90(16,hour)}$ = 47dB	8.1.2 8.4	The L_{A90} sound level was measured at the noise sensitive location with the source absent.
Assessment made during the daytime, so the reference time interval is 1 hour		7.2	
Specific sound level as predicted	$L_{Aeq(60min)}$ = 31dB	7.3.6	The specific sound has been predicted by calculation alone as the Proposed Development is not existing at the time of the survey.
Acoustic feature correction	+0dB	9.2 9.3.2	It is not anticipated that the specific sound will have any impulsive, tonal or intermittent characteristics.
Rating level	(31 + 0) dB = 31dB	9.2	
Background sound level	$L_{A90(16,hour)}$ = 47dB	8	
Excess of rating over background sound level	(31 - 47) dB = -16dB	11	Assessment indicates that no adverse effect is likely on the noise sensitive locations as the specific sound is 16dB below the background levels and is lower than the residual sound. Context has also been considered.
Uncertainty of the assessment	Not significant	10	The specific sound is a worst-case prediction as the assessment assumes a worst-case operational scenario. The assessed specific sound is the worst-case prediction to NSL4.

10.5.3.4.2 Consideration of Tonality and Impulsivity

The assessment for tonality and impulsivity has determined that the noise emissions from the proposed development are lower than the existing background and residual noise levels. As a result, the emissions are unlikely to have an effect at the Noise Sensitive Locations (NSLs) or produce any tonal or impulsive characteristics. The quality of the effect is considered neutral, with a significance that is imperceptible. This is a permanent and continuous effect, but because it will not cause any noticeable change in the acoustic environment, the overall conclusion is not significant.

10.5.3.4.3 EPA NG4

NG4 recommends a daytime noise criterion of 55 dB $L_{Ar,T}$ (07:00–19:00 hrs) for assessing industrial and commercial noise in areas of low background sound levels. At NSL4, the predicted noise emissions from the Proposed Development during daytime hours are 31 dB $L_{Aeq,T}$, with no identified tonal or impulsive characteristics. As such, when applying a rating level in accordance with BS 4142:2014+A1:2019, no penalty is warranted. Therefore, the predicted noise levels at NSL5 are expected to remain well below the NG4 criterion, and compliance with the guidance is anticipated. Table 10-29 outlines the predicted noise effect at each noise sensitive location, the project criteria and compliance with the project criteria.

Table 10-29 Operational Noise Levels at Each Sensitive Receptor

Noise Sensitive Location	EPA NG4 Daytime Criteria $L_{Ar,T}$ dBA	Predicted Noise Level from the Proposed Development $L_{eq,T}$ dBA
NSL1	55	29
NSL2	55	19
NSL3	55	23
NSL4	55	31
NSL5	55	23
NSL6	55	28
NSL7	55	20

10.5.3.4.4 Overall Day-time Noise Effect

Based on the operational noise assessment, the proposed development's effects are considered not significant across all assessed sources.

The noise from the crèche play area and external amenity spaces is assessed as having a neutral quality and an imperceptible significance at nearby sensitive locations. These are permanent and continuous effects that are likely to occur, but the modelling, which incorporates operational hours and a vocal effort spectrum, demonstrates that the resulting noise levels will not cause a noticeable change in the acoustic environment.

Regarding operational traffic noise, the overall effect is concluded to be not significant. While traffic on the new access road will increase substantially, its impact is minimal when compared to the existing wider road network. The worst-case scenario, a 16.41% increase in traffic on link 2, is predicted to cause a change of less than 1 dB(A), which is considered imperceptible to the average person. Therefore, the effect is neutral and not significant. Similarly, noise from car parking is considered not significant due to its short duration, isolated nature, and imperceptible effect on NSLs.

10.5.3.5 Night-time Noise Effect

At night-time, the Proposed Development may generate noise with different characteristics compared to daytime operations. The noise model for the night-time scenario focuses on sources expected to operate during this period. Traffic and car parking has been assessed separately and found not have any significant effect on the surrounding sensitive receptors as outlined in Section 10.5.3.

The nighttime (23:00 – 07:00) situation assumes the following noise sources:

- External amenity (POS and COS) operational from the hours of 23:00-01:00 based on persons speaking with normal vocal effort and occupancy as outlined in Section 10.5.3.3.5.
- Creche assumed to not operate during the nighttime period.

10.5.3.5.1 BS 4142 Noise Effect Assessment (Night-time 23:00 – 07:00)

The noise effect at the nearest NSLs (NSL1-NSL7) has been assessed in accordance with BS4142. Table 10-30 outlines the assessment at the closest NSL (NSL4), which is the worst-case receptor due to its proximity to the Proposed Development. All other NSLs have been assessed and are predicted to have lower onset noise levels than NSL4. The residual and background noise levels were taken from the unattended logger positions and averaged across the entire measurement period; this is indicative of all typical noise climates in the surrounding area.

Table 10-30 Noise Effect During Nighttime Hours

Results		Relevant BS 4142 Clause	Commentary
Predicted specific sound level (nighttime)	$L_{Aeq(15min)}$ = 28dB	7.3.6	As the Proposed Development is not yet existing, noise levels have been predicted using SoundPlan modelling software. Worst case specific sound predicted at NSL4.
Residual sound level (nighttime)	$L_{Aeq(8,hour)}$ = 45dB	7.3.2	The residual sound level was dominated by road traffic noise on surrounding roads. Background noise from measurement location L1 was assessed as this is representative for worst case receptor NSL4.
Background sound level (nighttime)	$L_{A90(8,hour)}$ = 35dB	8.1.2 8.4	The L_{A90} sound level was measured at the noise sensitive location with the source absent.

Results		Relevant BS 4142 Clause	Commentary
Assessment made during the daytime, so the reference time interval is 1 hour		7.2	
Specific sound level as predicted	$L_{Aeq(15min)}$ = 28dB	7.3.6	The specific sound has been predicted by calculation alone as the Proposed Development is not existing at the time of the survey.
Acoustic feature correction	+0dB	9.2 9.3.2	It is not anticipated that the specific sound will have any impulsive, tonal or intermittent characteristics.
Rating level	(28 + 0) dB = 28dB	9.2	
Background sound level	$L_{A90(8,hour)}$ = 35dB	8	
Excess of rating over background sound level	(28 - 35) dB = -7dB	11	Assessment indicates that no adverse effect is likely on the noise sensitive locations as the specific sound is 7dB below the background levels and is lower than the residual sound. Context has also been considered.
Uncertainty of the assessment	Not significant	10	The specific sound is a worst-case prediction as the assessment assumes a worst-case operational scenario. The assessed specific sound is the worst-case prediction to NSL4.

10.5.3.5.2 Consideration of Tonality and Impulsivity

The assessment for tonality and impulsivity has determined that the noise emissions from the proposed development are lower than the existing background and residual noise levels. As a result, the emissions are unlikely to have an effect at the Noise Sensitive Locations (NSLs) or produce any tonal or impulsive characteristics. The quality of the effect is considered neutral, with a significance that is imperceptible. This is a permanent and continuous effect, but because it will not cause any noticeable change in the acoustic environment, the overall conclusion is not significant.

10.5.3.5.3 EPA NG4

NG4 recommends a nighttime criterion of (23:00hrs – 07:00hrs) 45dB $L_{Aeq,T}$, in areas of low background noise, the predicted noise emissions from the development are 28 dBA at NSL4, with no tonality or impulsivity, therefore the NG4 criteria is expected to be achieved. Table 10-31 outlines the predicted noise effect at each noise sensitive location, the project criteria and compliance with the project criteria.

Table 10-31 Operational Noise Levels at Each Sensitive Receptor

Noise Sensitive Location	EPA NG4 Nighttime Criteria $L_{Aeq,T}$ dBA	Predicted Noise Level from the Proposed Development $L_{eq,T}$ dBA
NSL1	45	27
NSL2	45	17
NSL3	45	18
NSL4	45	28
NSL5	45	21
NSL6	45	25
NSL7	45	17

10.5.3.5.4 Overall Night-time Noise Effect

Based on the operational noise assessment, the proposed development's effects are considered not significant across all assessed sources.

The noise from the crèche play area is assumed not operational during the night-time and external amenity spaces is assessed as having a neutral quality and an imperceptible significance at nearby sensitive locations. These are permanent and continuous effects that are likely to occur, but the modelling, which incorporates operational hours and a vocal effort spectrum, demonstrates that the resulting noise levels will not cause a noticeable change in the acoustic environment.

Regarding operational traffic noise, the overall effect is concluded to be not significant. While traffic on the new access road will increase substantially, its impact is minimal when compared to the existing wider road network. The worst-case scenario, a 16.41% increase in traffic on link 2, is predicted to cause a change of less than 1 dB(A), which is considered imperceptible to the average person. Therefore, the effect is neutral and not significant. Similarly, noise from car parking is considered not significant due to its short duration, isolated nature, and imperceptible effect on NSLs.

10.5.3.5.5 Operational Noise – Conclusion of Unmitigated Effects

Table 10-32 outlines the conclusion of unmitigated noise effects for the operational phase.

Table 10-32 Summary of Operational Phase Effects Pre Mitigation

Quality	Significance	Duration	Type
Neutral	Slight	Long-Term	Noise

10.5.3.6 Operational Phase – Vibration

There are no specific vibration criteria for buildings in Ireland. The vibration criteria for this project are based on BS 5228-2:2009+A1:2014, which provides guidance relating to the assessment of human response to vibration in terms of PPV. Table 10-33 outlines the range of vibration values and the associated potential effects on humans.

Table 10-33 Project Vibration Criteria

Vibration Level, PPV	Effect
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.
1 mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

Vibrations typically become perceptible between 0.15 mm/s to 0.3 mm/s and may become annoying or disturbing at higher magnitudes. Higher levels of vibration are tolerated for single events or events of short duration, particularly during construction projects. For example, groundbreaking or piling can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place and timeframes are known.

The Proposed Development is a mixed-use development offering residential, creche and commercial spaces, there are no predicted sources of vibration that will cause significant adverse effect on the surrounding NSLs.

10.5.3.6.1 Vibration – Conclusion of Unmitigated Effects

While no specific Irish vibration criteria exist for buildings, the vibration assessment is based on the accepted guidance from BS 5228-2:2009+A1:2014. The standard assesses human response to vibration in terms of Peak Particle Velocity (PPV). This guidance indicates that vibration may become perceptible in residential environments at levels of approximately 0.3 mm/s and could lead to complaints at higher magnitudes, such as 1 mm/s.

The operational phase of the Proposed Development is not predicted to generate any sources of vibration. The effect is concluded to be neutral in quality and imperceptible in significance. This is a permanent effect, yet its probability of occurrence is unlikely. Therefore, the overall conclusion is that the operational vibration effect on the surrounding Noise Sensitive Locations (NSLs) will be not significant.

10.5.3.7 Inward Noise Impact

The stage one risk assessment is used to assess the site for potential risks that may occur in terms of noise impact. The ProPG sets out four categories of risk:1) negligible, 2) low, 3) medium or 4) high risk.

The risk assessment also considers the risk based on the number of L_{AFmax} events per night as follows;

- A site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and;
- A site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times per night.

Paragraph 2.9 of ProPG states that,

"The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a "typical worst case" 24 hour day either now or in the foreseeable future."

To assess the noise effect with the ProPG risk categories a baseline noise survey was undertaken on the site to quantify the existing noise environment.

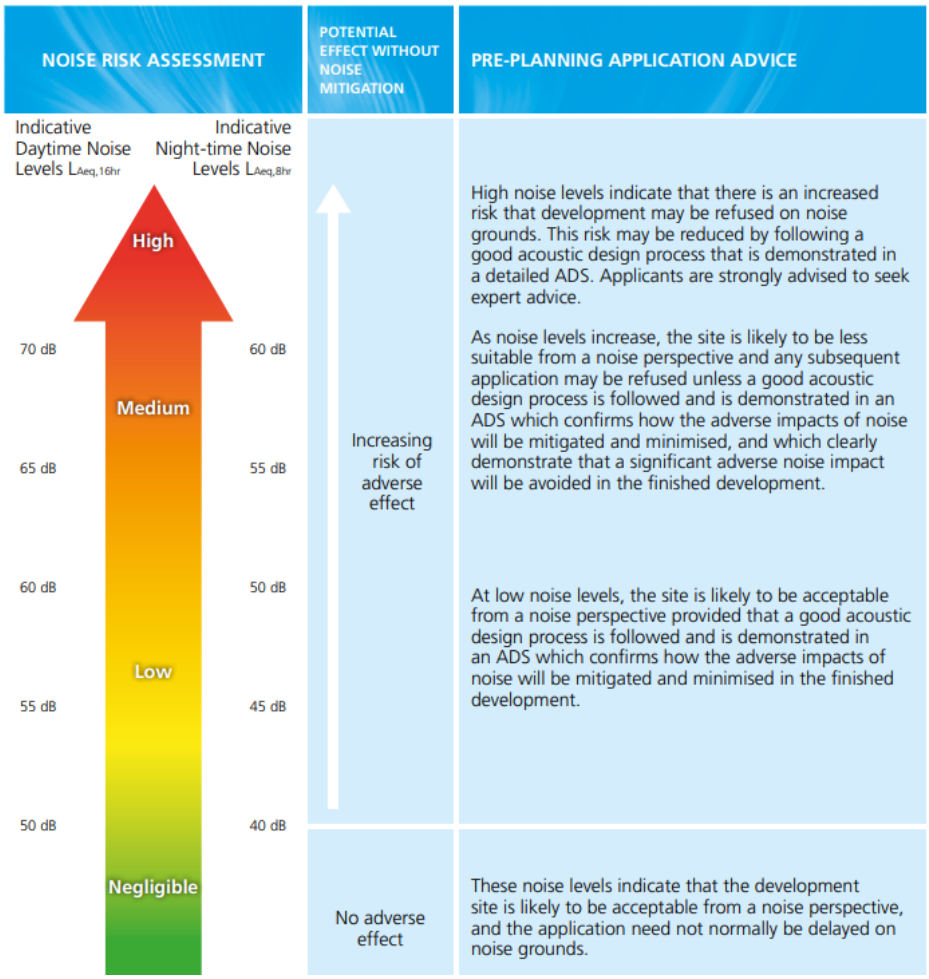

Figure 10-9 Propg Risk Analysis

This section outlines the full acoustic design assessment in line with ProPG guidance.

10.5.3.7.1 Element 1: Good Acoustic Design Progress

ProPg States the following in relation to Good Acoustic Design Process:

"A good acoustic design process takes a multi-faceted and integrated approach to achieve optimal acoustic conditions, both internally (inside noise-sensitive parts of the building(s)) and externally (in spaces to be used for amenity purposes)."

"*Good acoustic design should avoid "unreasonable" acoustic conditions and prevent "unacceptable" acoustic conditions (these terms are defined in Element 2). Good acoustic design does not mean overdesign or gold plating of all new development but seeking to deliver the optimum acoustic outcome for a particular site"*

The following considerations are recommended by ProPG:

- "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.
- Assess external amenity area noise."

10.5.3.7.2 Discussion of Good Acoustic Design

Mitigation of Sources

The development is located close to road sources which are not on or part of the development therefore it is not possible to reduce or relocate the relevant noise sources.

Site Layout and Orientation

The southern elevation of the development is most exposed to road noise as it is adjacent to Blessington Road and in close proximity to the N81.

Effect of Noise Control Measures

The effects for noise control measures on other building elements including ventilation have been considered. It is generally impractical to provide ventilation via openable windows in urban/built up areas. An open window will provide 10-15dB of attenuation which in built-up urban and suburban areas is not practical. ProPG makes reference to specific cases in suburban areas where the development is beside a transport link. In general, the good acoustic design process in these areas is to provide ventilation via attenuated natural vents or mechanical ventilation. This allows the occupants to have adequate ventilation with adequate noise levels.

External Amenity

ProPG states the following with regard to external amenity spaces:

"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB LAeq,16hr."

The external amenity source noise levels are considered below.

10.5.3.7.3 Internal Noise Levels

Based on the predicted noise levels at the facades of the proposed development, enhanced glazing will be required on some facades.

10.5.3.7.4 Element 3 - External Amenity Spaces

The external amenity spaces on the development such as public and communal open spaces, gardens and a creche outdoor play area. All public and communal open areas, gardens and the creche outdoor play area are predicted to achieve the recommended desirable noise levels of 55dBA $L_{Aeq,16hour}$.

Based on the measured noise levels at the site and the noise model for the proposed development, it is predicted that the external noise levels across the development achieve the requirements of ProPG Element 3.

10.5.3.7.5 Element 4 - Assessment of Other Relevant Issues

This section of the acoustic design report considered the other relevant issues. Element 4 considers other issues which may remain relevant to the assessment, these issues are as follows:

- 4(i) compliance with relevant national and local policy.
- 4(ii) magnitude and extent of compliance with ProPG .
- 4(iii) likely occupants of the development.
- 4(iv) acoustic design v unintended adverse consequences and;
- 4(v) acoustic design v wider planning objectives.

Compliance with Relevant National and Local Policy

There are no specific noise guidance or policy documents for residential developments. The Dublin Agglomeration Noise Action Plan refers to the ProPG as the relevant document for assessment of the noise effect on new residential developments as followed in this acoustic design statement.

Magnitude and Extent of Compliance with ProPG

This report demonstrates that all dwellings will meet the specified internal noise level requirements provided the guidance in this report is followed. External amenity spaces have been provided in line with the guidance set out in ProPG. Based on this the development is in general compliance with the ProPG requirements.

Likely Occupants of the Development

Additional needs of the future occupants are not known at this stage however the needs of all potential occupants have been considered with the assessment of adequate internal noise

levels and provision of adequate external amenity spaces to meet the needs of potential occupants.

Acoustic Design v Unintended Adverse Consequences

The design has considered the effect of adverse consequences; mitigation has been provided by specification of the sound insulation and ventilation requirements.

Acoustic Design v Wider Planning Objective

Where possible the wider planning objectives have been considered including the need for residential housing with good transport links. It is assumed that the wider planning objectives have been adhered to by following the ProPG guidance.

10.5.3.7.6 Stage 2 Assessment Conclusion

The stage 2 assessment considers all four (4) elements, the principals of good acoustic design have been followed.

The element 2 assessment has considered the measures required to provide an adequate acoustic environment with appropriate noise levels for internal spaces. The sound insulation and ventilation requirements have been specified based on the predicted façade noise levels.

The element 3 assessment of external amenity spaces has considered the noise effect on the development and the external amenity spaces. The appropriate provision of external amenity space has been provided through the use of public and communal open spaces, gardens and a creche outdoor play area which are in line with the ProPG guidance.

Other relevant issues have been considered including, local policy, unintended consequences and the wider planning objectives.

10.5.4 Potential Cumulative Impacts

A review of other off-site developments was completed as part of this assessment. Chapter 2 of this EIAR details the existing, proposed and granted planning permissions on record in the area, a review of these planning permissions has been completed as part of this assessment.

The following planning applications have been reviewed as part of this assessment:

SDCC Reg. Ref. 322539 (SD24A/0092W):

The proposed residential scheme is located approximately 240 meters from the proposed development on the lands adjacent to Drury Mills and Drury Park, Swiftbrook, Saggart, Co. Dublin. The development will consist of a residential scheme of 73 no. units comprising a mix of 6 no. houses, 59 no. own-door duplexes and 8 no. apartments arranged in 4 blocks set around a central amenity space. located within the curtilage of protected structures. This is currently a live case and is pending a decision of application Reg. Ref. 322539.

Construction Phase:

The proposed residential scheme is located approximately 240 meters from the boundary of the development in this EIAR Chapter. If construction periods for both projects were to run simultaneously, there is a likelihood of combined noise and vibration effects on the surrounding area. However, given the current pending status of the residential application and

the staggered construction phases of the proposed development, it is anticipated that any cumulative impacts will be minimized. This will be ensured by the full implementation of the mitigation measures outlined in this chapter.

Operational Phase:

The cumulative effect of both the proposed development and the residential development will not cause adverse noise or vibration conditions on the surrounding area during the long-term operational phase. This is based on the assumption that both developments will adhere to all relevant noise criteria and that the operational noise and vibration from each will be appropriately managed and controlled. Therefore, the combined effect of both developments is considered to be not significant once they are operational.

SDCC Reg. Ref. 321950 (SD24A/0187W):

The proposed primary care centre is located approximately 590 meters from the proposed development on the lands at Citywest Campus, Garters Lane, Saggart, Co. Dublin. The primary care centre building will provide HSE Services such as general primary care, mental health, disability and older person services. SuDS drainage, PV panels at roof level, signage, landscaping, boundary treatment and all associated site works and services.

Construction Phase:

Given the considerable distance of approximately 590 meters between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. 312501 (TA06S.312501):

The proposed residential scheme is located approximately 710 meters from the proposed development at Mill Road, Saggart, Co. Dublin. The proposed residential scheme will consist of the demolition of an existing dwelling, construction of 274 no. residential units (51 no. houses, 223 no. apartments), creche and associated site works.

Construction Phase:

Given the considerable distance of approximately 710 meters between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. SHD3ABP-310570-21:

The proposed residential scheme is located approximately 800 meters from the proposed development at Cooldown Commons and Fortunestown, Citywest, Co. Dublin. The proposed residential scheme comprising 421 units, offices, retail units x3 and residential amenity areas x2, within 9 blocks ranging in height from 1-13 storeys. The proposal will include 289 car parking spaces along with 650 cycle parking spaces. The development will provide public and communal open spaces throughout including a public plaza adjoining Fortunestown Luas stop. Provision of vehicular, pedestrian, and cyclist accesses to the site, including pedestrian bridge to the public park (under construction) to the east. The application includes for all landscaping, ESB substations, plant areas, bin storage, surface water attenuation and all other site development works, and site services required to facilitate the proposed development. The proposed development seeks to amend SHD permission ABP-302398 -18 (under construction to the west), replacing 32 permitted duplex apartments along with associated amendments to internal roads and open spaces. The current proposal also replaces permission SD16A/0078 previously granted on this site.

Construction Phase:

Given the considerable distance of approximately 800 meters between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. 308088 (TA06S.308088):

The proposed residential scheme is located approximately 910 meters from the proposed development at Garters Lane, Saggart, Co. Dublin. The proposed residential scheme will comprise of 224 no. apartments and associated site works.

Construction Phase:

Given the considerable distance of approximately 910 meters between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. 321696 (SD23A/0336):

The proposed primary school is located approximately 990 meters from the proposed development on the lands south of Coolamber Drive, Rathcoole, Co. Dublin. The proposed primary school (Roll No. 20549P) will include 20 classrooms, with a gross floor area of 3,449 sq.m over 3 storeys.

Construction Phase:

Given the considerable distance of approximately 990 meters between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. 306602 (TA06S.306602):

The proposed residential scheme is located approximately 1.72 kilometers from the proposed development at Citywest Road and Magna Drive, Fortunestown, Citywest, Co. Dublin. The proposed residential scheme will comprise of 463 no. residential units (89 no. houses, 353 no. apartments, 21 no. duplex apartments), creche and associated site works.

Construction Phase:

Given the considerable distance of approximately 1.73 kilometers between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. LRD22A/0002:

The proposed large-scale residential scheme is located approximately 2 kilometers from the proposed development at “The Foothills”, within the townlands of Killinarden and Kiltalown, Tallaght, Co. Dublin. The proposed large-scale residential scheme will comprise of 635 no.

residential units, a creche, community centre, retail/commercial units, public open space and all associated site development works.

Construction Phase:

Given the considerable distance of approximately 2 kilometers between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

ABP- 316828-23

The application for the BusConnects Tallaght/Clondalkin Core Bus Corridor scheme will ensure public transport services can access key areas such as the retail and recreational centre of the city; public transport hubs at the rail and bus station; along with the city centre hotels.

Construction Phase:

The BusConnects Tallaght/Clondalkin Core Bus Corridor scheme has been approved, with construction works expected to be of short duration. Its EIAR, prepared by Arup, concludes that most construction activities will have a negative, not significant to slight, and temporary effect. However, general road works, urban landscaping, and utility diversion works are predicted to have a negative, moderate to significant, and temporary effect on receptors within 15 meters. Given the approval in 2024 and the short-term nature of its construction, it is unlikely that the two projects' construction periods will overlap, thereby avoiding a cumulative noise and vibration effect.

Operational Phase:

Chapter 9 of the BusConnects EIAR concludes that the operational phase will not cause a negative noise effect on the surrounding area during the 2043 design year. This is due to traffic redistribution. As a result, the long-term cumulative noise effect from both developments in operation is also predicted to be not significant on surrounding sensitive receptors.

SDCC Reg. Ref. 319500 LRD23A/0011:

The proposed large-scale residential scheme is located approximately 3.96 kilometers from the proposed development within the townland of Newcastle South, Newcastle and along Athgoe Road and Hazelhatch Road (R405) to Ground Investigations Ireland premises, Newcastle, Co. Dublin. The proposed large-scale residential scheme will comprise of the construction of 119 houses, 12 apartments and all associated site works. An Environmental Impact Assessment Report (EIAR) was submitted with this application.

Construction Phase:

Given the considerable distance of approximately 3.96 kilometers between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

SDCC Reg. Ref. SHD3ABP-306705-20/EP:

The proposed residential scheme is located approximately 4.9 kilometers from the proposed development at the former Gallaher's Cigarette Factory site, at the junction of Airton Road and Greenhills Road, Tallaght, Co. Dublin. The proposed residential scheme will comprise of the demolition of existing factory/warehouse buildings on site (total floor area c. 10,076.8sq.m). Construction of 502 apartments (comprising 197 1-bed; 257 2-bed; and 48 3-bed units) within 6 blocks ranging in height from 4 to 8 storeys. All residential units provided with associated private balconies/terraces to the north/south/east/west elevations. Provision of residential amenity facilities, 3 retail units, creche and services/bin store areas (total non-residential floor area c.1, 839sq.m). A total of 202 car parking spaces (at basement and under croft levels) and 584 no. bicycle parking spaces. Vehicular/pedestrian/cyclist accesses from Greenhills Road and Airton Road. Provision of road improvements and pedestrian crossings. All associated site development works, open space, landscaping, boundary treatments, plant areas, PV panels (at roof level), waste management areas, and services provision (including ESB substations).

Construction Phase:

Given the considerable distance of approximately 4.9 kilometers between the two developments, combined with the significant sound attenuation provided by existing buildings and infrastructure, it is unlikely that any cumulative noise and vibration effects will be experienced during the short-term construction phase. This assessment holds true even if both projects' construction periods run simultaneously.

Operational Phase:

During the long-term operational phase, the distance and screening between the two developments will continue to provide effective attenuation. Consequently, there will be no cumulative noise and vibration effects on the surrounding area. The quality of this effect is neutral, its significance is imperceptible, and it is considered to be not significant.

10.5.5 "Do Nothing" Impact

Under the Do-Nothing scenario, the prevailing noise environment at the closest noise and vibration sensitive locations will remain in line with those measured during the baseline study and hence will be of neutral effect in terms of noise and vibration effect. Figures outlined in Chapter 14: Material Assets: Traffic, the traffic levels will not increase by more than 25% which

would equate to an increase of 1dB in traffic noise levels. Therefore, there will be no additional noise effect from the operation of vehicles. Table 10-34 outlines the operational traffic and percentage impact on the existing road network detailed in Figure 10-5.

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.

As the site is zoned for development, in the absence of the Proposed Development, it is likely that a development of a similar nature is likely to be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase effects outlined in this assessment are likely to occur in the future, even in the absence of the Proposed Development.

Table 10-34 Survey vs Do-Nothing Comparison

Site	AADT (Apr 2025 – Dublin Urban)	AADT (Do Nothing) 2032	% Increase
1	20930	22841	9.13
2	7578	8270	9.13
3	12513	13657	9.14
4	13328	14546	9.14
5	4826	5267	9.14
6	14487	15810	9.13
7	18337	20012	9.13
8	15147	16530	9.13

Table 10-35 outlines the magnitude of change based on the increase in traffic flows from the Do-Nothing (2032) scenario. Traffic levels increasing less than 25% will likely equate to an increase of noise levels in the range of 1dB(A). The additional traffic generated by the proposed development will not lead to a significant increase in noise or contribute to adverse noise impact on surrounding sensitive receptors.

Table 10-35 Magnitude of Change

Noise Change, dB	Magnitude of Impact
0	No Change
0.1 – 2.9	Negligible
3 – 4.9	Minor
5 – 9.9	Moderate

Noise Change, dB	Magnitude of Impact
10+	Major

10.6 Avoidance, Remedial & Mitigation Measures

This section outlines remedial and mitigation measures based on the predicted noise and vibration effects of the construction and operational phases of the Proposed Development.

10.6.1 Construction Phase

10.6.1.1 Noise and Vibration Mitigation Measures

Best practice measures for noise and vibration from construction sites are found within BS 5228 (2009+A1:2014) part 1 and part 2. Construction noise effects are expected to vary during the construction phase of the Proposed Development; this effect will depend on the distance between the construction activities and noise sensitive receptors. The contractor will ensure that all best practice noise control measures will be used, to ensure any negative noise effects at noise sensitive locations are minimised. The mitigation measures outlined in this chapter will be incorporated into the CEMP.

The best practice measures set out in BS 5228 (2009) Part 1 and 2 includes guidance on several aspects of construction site mitigation measures, this includes the:

- Selection of quiet plant and equipment;
- Noise control at source of the noise;
- Screening; and
- Public liaison.

10.6.1.1.1 Selection of Plant and Machinery

The noise effect of all plant and machinery shall be assessed prior to selection of the plant for the project. All plant used onsite will comply with S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001.

10.6.1.1.2 Noise Control at Source

Where replacing a noisy item of plant is not viable or practical, noise shall be controlled at source. This includes modifying the piece of plant or machinery to generate less noise, using dampening to control vibration induced noise or rattling. Example best practice mitigation measures to be used are as follows:

- All plant and equipment to be switched off when not in use to prevent idling;
- The use of white noise reversing alarms;
- Restriction on the dropping and loading of materials to less sensitive hours;
- The use of local screening for noisy activities or works with hand tools;
- Not dropping materials onto hard surfaces and using rubber mats etc for the dropping of materials; and
- Ensure all plant and equipment is well maintained and cleaned, all lubrication should be in line with manufacturers guidelines.

10.6.1.1.3 Vibration Control

Vibration monitoring will be implement during the demolition and substructure stages of the construction phase to ensure vibration effects are monitored and controlled adequately as to not cause significant effect at the surrounding sensitive receptors. Suitable locations for vibration monitoring are at NSL1 and NSL4.

10.6.1.1.4 Screening

Screening will be used to reduce the construction noise effect on the NSLs. The use of site hoarding and careful selection of areas for noisy works, using buildings on the site, site offices and the building being constructed to screen noise from the works.

Local screening of noisy works with the use of temporary acoustic barriers, examples are as follows:

Figure 10-10 Temporary Construction Noise Barrier © Ventac

10.6.1.1.5 Public Engagement

A public liaison officer shall be put forward by the contractor to liaise with the local residents on matters relating to noise. Residents shall be informed of any noise works scheduled where there is the potential to generate high levels of construction noise or if specialist works etc need to be conducted out of the working hours. This person shall also be the point of contact for all complaints and be responsible for reviewing the noise monitoring results and exceedances.

This is crucial as the construction of the development is proposed to be a phase construction and occupancy approach with the construction of phase 1A and phase 1B being constructed, with phase 2A and 2B beginning shortly after occupancy of phase 1A and 1B. A public liaison officer shall be appointed by the contractor to liaise with the occupants of phase 1A and 1B regarding matters of noise and vibration disturbance.

10.6.1.1.6 Site Specific Recommendations

The calculations set out in Table 10-9 of Section 10.5.2.1 are based on assumed site construction works and a combination of the plant operating at the same time i.e. a worst-case

scenario. While this may not reflect actual site conditions, the assessment has been carried out on a conservative basis. Table 10-36 - Table 10-41 outlines the required attenuation for each construction stage.

Table 10-36 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 1A.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0

Table 10-37 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 1B.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	2	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0

Table 10-38 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 2A.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0

Table 10-39 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 2B.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0

Table 10-40 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 3A.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	4	1	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0
Phase 2B	65	0	0	0	0

Table 10-41 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 3B.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	3	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0
Phase 2B	65	0	0	0	0
Phase 3A	65	0	6	3	0

Table 10-42 outlines the recommended site-specific noise mitigation measures.

Table 10-42 Mitigation Measures Required During Construction Phase

Construction Stage	Recommended Noise Mitigation Measures
Site Setup	Erect a minimum 2.4m high site hoarding that blocks the line of sight between noise source and receiver. Example construction for the site hording would be as follows: A 2.4m high and 9mm plywood (4.5 kg/m2). Barrier must be solid and not contain gaps at the bottom or between adjacent panels Local screening are required around hand tools in addition to hoarding.
	An absorptive lining shall be considered for screening around hand tools will need to have an absorptive lining to avoid reflections increasing noise at other receivers. On this project 8 NSL's have been identified, It is recommended that a noise monitor shall be placed on the boundary of the nearest noise sensitive locations closest to the works i.e. NSL1 and NSL8/NSL9 during phase 2 in this case.
Substructure	Site hoarding to block line of sight. Local screening around noisy plant and equipment. Noise and vibration monitoring as above
Superstructure	Local screening around saws/hammers where possible. Use external new building to screen noise from works where possible. Noise and vibration monitoring as above
External finishes	Local screening around hand tools. Noise and vibration monitoring as above

10.6.2 Operational Phase

10.6.2.1 Noise Mitigation Measures

The assessment conducted on the operational phase of the Proposed Development takes into account the operation of the public and communal open spaces, car parking and creche outdoor play area. The predicted results of the operational noise assessment predict that there will be no significant noise effect on the surrounding sensitive receptors, therefore no mitigation measures are required to control operational noise levels from the proposed development.

At design development stage, when the final plant and equipment schedule developed, noise levels for each piece of equipment shall be reviewed by an Acoustic Consultant to ensure compliance with the limits set in this chapter and to protect the amenity of the future residents of the Proposed Development.

10.6.2.2 Vibration Mitigation Recommendations

There are no predicted vibration sources during the operational phase, therefore, mitigation measures are not required to control operational phase vibrations. This shall be reviewed as part of the design review once the final plant and equipment selections are known.

10.6.3 Operational Phase – Inward Impact

10.6.3.1 Building Envelope Specification

This section outlines the building envelope requirements based on the measurements outlined in Section 10.3.2. Facade, wall, glazing, roof and ventilation specifications have been determined to achieve the internal noise level criteria for the development. The specification has been determined in accordance with EN ISO 12354-3: 2017 based on the predicted façade day and night noise levels. The specification outlined in this section is based on the measured noise levels at the site and has taken into consideration aircraft noise. Consideration has also been given to the internal roads within the site.

The building envelope specification should be confirmed by the acoustic consultant at design stage once the internal layouts and design development has been completed. Any changes to the assumed ventilation strategy and glazing requirement should be considered as part of the review and it should be based on the internal noise levels cited in this report.

The glazed elements and ventilation openings are typically the acoustically weakest elements of any façade. The required sound insulation performance of façade glazed elements and ventilation openings is outlined in Table 10-43.

It is required that the glazing, frame and seals as a whole achieve the performance when the window is in the closed position. The performance requirements outlined in Table 10-43 are considered to provide adequate sound insulation to achieve the relevant day and night internal design goals respectively.

Table 10-43 Sound Insulation Performance for Glazed Elements and Ventilation

Façade	Glazed Elements (Frame & Glazing) Sound Insulation Requirements (Indicative requirements equal or approved)							Façade Ventilation Requirement2
	Octave Band Frequency Requirements1 R dB						Glazing Acoustic Performance dB RW	
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
RED	28	20	28	35	40	42	32dB Rw	35dB Dn,e,w (1) Natural Ventilation or Mechanical Ventilation
All other Facade	Standard Double Glazing[3]							Standard passive ventilation

1) Natural ventilation assumed throughout. Should this change to mechanical ventilation the above specification may be reduced. An acoustic consultant should be engaged to assess the level of reduction appropriate to maintain the internal noise level criteria.

2) The calculation assumes a maximum of 1 ventilation opening per bedroom at the specification outlined in the Acoustic Design Statement.

3) Standard double glazing assumes a construction of two panes of 3mm glass with a 10mm cavity achieving a minimum 29dB R_W, equal or approved. Similarly, standard natural ventilation assumes a performance of 29dB $D_{n,e,w}$.

Figure 10-11 Façade Specification Markup Detailing the Glazing Specification

It is important to note that the requirements outlined above are minimum requirements for the glazed element as a whole. The octave band values are indicative and specific to the assessed glazing type, equal or approved to meet the minimum project requirements is acceptable.

We understand the ventilation strategy for the development has not been confirmed at this stage of the design. It has been assumed that ventilation will be provided via natural ventilation system. Should the ventilation strategy change to mechanical ventilation strategy Wave Dynamics should be notified. Typically, the use of a natural ventilation strategy will lead to an enhanced glazing specification compared to a sealed mechanical ventilation system. This assessment is based on the windows in closed position.

10.6.3.1.1 External Wall Construction

The façade wall construction has been assumed to achieve a minimum sound insulation performance of 56dB R_W. Typical façade construction such as concrete, blockwork, timber frame and brick offer high levels of sound insulation and will meet this requirement.

10.6.3.1.2 Roof Construction

The roof construction has been assumed to achieve a minimum sound insulation performance of 50dB R_W. Any skylights and glazing in the roof system to corridor or communal areas should be of standard double-glazed construction to meet a performance of minimum 29 dB R_w. If there are any skylights to habitable bedrooms Wave Dynamics should be informed to provide specific guidance in each case.

10.6.3.1.3 External Amenity Space

Measured daytime noise levels across the Proposed Development lands were generally found to be below the external amenity criterion of 55 dB(A) as outlined in ProPG:2017, indicating that the existing acoustic environment is compliant with external amenity criterion. While marginally elevated levels were recorded at location L1 closest to existing road infrastructure, these values reduce significantly with distance into the site. As the development is constructed, the introduction of new buildings will provide substantial screening from surrounding noise sources. Consequently, external amenity spaces located deeper within the site are expected to experience further reductions in noise levels, benefiting from screening effects and resulting in an improved overall acoustic environment for future occupants.

10.6.4 "Worst Case" Scenario

This assessment assumes a worst-case scenario when assessing the construction and operational noise and vibration effects on the surrounding noise sensitive locations. The dominating noise source in the area is road traffic noise and intermittent aircraft noise which has been assessed, the additional construction traffic is not predicted to generate any additional noise effect. The operational traffic flows outlined in Section 10.5.3.3.8 are not predicted to cause an increase in traffic noise levels at the surrounding sensitive receptors. Additional operational noise sources such as plant and equipment, creche outdoor play area, public and communal open spaces all contribute to the operational noise emissions of the Proposed Development, as outlined in Section 10.5.3 the predicted noise emissions of the Proposed Development are within the project criteria.

10.7 Residual Effects

This section outlines the potential significant environment effects which remain after mitigation measures are implemented.

10.7.1 Construction Phase

10.7.1.1 Noise

As the construction phase is temporary, there will be no long-term/permanent noise effects on the surrounding area from construction noise. Section 10.6.1 outlines mitigation measures which will reduce the construction noise effect on the surrounding sensitive receptors and result in an overall effect that is considered non-significant in EIA terms.

10.7.1.2 Vibration

As the construction phase is temporary, there will be no long term/permanent vibration effects on the surrounding area from construction activities. Section 10.6.1 outlines mitigation measures which will reduce the construction vibration effect on the surrounding sensitive receptors and result in an overall effect that is considered non-significant in EIA terms.

10.7.2 Operational Phase

10.7.2.1 Noise

Operational noise sources from the Proposed Development include the public and communal open spaces, crèche outdoor play area, and on-site traffic from car parking.

Based on the operational noise assessment, the predicted noise levels from all sources will not cause adverse noise effects on the surrounding sensitive receptors. These effects are considered to be neutral in quality and slight in significance. They are permanent and continuous, and their occurrence is likely. However, when applying the binary conclusion framework as per EPA guidance, these effects are determined to be not significant in EIA terms.

10.7.2.2 Vibration

Based on the type, and assumed usage of the development, it is not expected that there will be any operational vibration effects on surrounding noise sensitive receptors. As such, operational vibration effects on surrounding sensitive receptors are considered non-significant in EIA terms.

10.7.3 Cumulative Residual Effects

10.7.4 Construction Phase

10.7.4.1 Noise

The cumulative construction noise effects of the proposed development in conjunction with other projects are considered not significant, provided the recommended mitigation measures are fully implemented. While a worst-case scenario of simultaneous construction could lead to potential adverse effects, this is considered unlikely due to the varying timelines and distances of the other developments. The staggered construction phases of the proposed development and the distance from the other proposed residential developments and BusConnects projects (approximately between 240 meters to 4.9 kilometers from the site) are expected to minimise cumulative effects.

10.7.4.2 Vibration

The cumulative construction vibration effects of the proposed development are also deemed not significant. While construction activities from the proposed development and other nearby projects (such as the proposed LRD's) could potentially overlap, the considerable distances between sites (e.g., the LRD being 3.96 kilometers away) provide significant natural attenuation. Furthermore, the most intensive vibration-producing activities, like piling and demolition, are typically of a short duration. The full implementation of the mitigation measures in this chapter will ensure that any combined vibration effects are minimized, leading to a conclusion of not significant residual cumulative effects.

10.7.5 Operational Phase

10.7.5.1 Noise

The cumulative residual effect of operational noise from the proposed development and other concurrent projects is concluded to be not significant. This is based on a comprehensive assessment of various noise sources and their combined long-term impact. The operational noise from the proposed development's on-site sources such as the crèche, public and communal open spaces assessed as having an imperceptible effect on surrounding sensitive receptors. When these are combined with the operational noise from other developments like large residential schemes, smaller residential schemes and BusConnects, the cumulative effect remains not significant. The minimal changes in road traffic noise from each development and the substantial distances and screening between them ensure that the combined long-term noise effects on the surrounding area are negligible.

10.7.5.2 Vibration

The operational phase of the proposed development is not expected to generate any perceptible vibration, nor are the other concurrent projects in the area. Therefore, the cumulative residual vibration effects during the long-term operational phase are assessed as not significant. There will be no adverse vibration conditions on the surrounding area from the combined operation of these developments.

10.7.6 Summary of Post-Mitigation Effects

This section outlines the summary of post-mitigation effects of the Proposed Development on the surrounding sensitive receptors.

10.7.6.1 Construction Phase

Following the application of mitigation measures, the likely significant residual effects during the construction phase are summarized in Table 10-44. The quality of effects is neutral for both noise and vibration. The significance of noise is assessed as slight, but based on the binary conclusion framework, it is ultimately determined to be not significant. The vibration effects are assessed as imperceptible, also resulting in a binary conclusion of not significant. Both of these effects are considered short-term.

Table 10-44 Summary of Construction Phase Effects Post Mitigation

Quality	Significance	Duration	Type
Neutral	Slight	Short-Term	Noise
Neutral	Imperceptible	Short-Term	Vibration

10.7.6.2 Operational Phase

Based on the noise impact assessment, the Proposed Development does not require mitigation measures to reduce the effect on the surrounding sensitive receptors, however, the likely significant residual effects during the operational phase are summarized in Table 10-45. The quality of effects is neutral for noise and the significance of noise is assessed as slight. The quality of effects is neutral for vibration and the significance of vibration effects are assessed as imperceptible. Both of these effects are considered long-term.

Table 10-45 Summary of Operational Phase Effects Post Mitigation

Quality	Significance	Duration	Type
Neutral	Slight	Long-Term	Noise
Neutral	Imperceptible	Long-Term	Vibration

10.8 Monitoring

This section outlines the recommended noise and vibration monitoring during the construction and operational phase of the Proposed Development.

10.8.1 Construction Phase

Noise and vibration monitoring will be implemented during the construction phase of the Proposed Development, particularly during the substructure works when piling operations are likely to occur. Given the proximity of multiple NSLs to the site, monitoring equipment shall be installed at NSL 4 during phase 1A/B and NSL3 during phase 2A/B and NSL1 during phase 3A/B, as these locations are closest to the anticipated construction activities.

10.8.2 Operational Phase

Noise and vibration monitoring is not required during the operational phase of the Proposed Development as the predicted noise levels during the operational phase fall within project criteria, and there are no predicted sources of operational vibration proposed for the development.

10.9 Interactions

This chapter has the potential to interact with the following environmental topics:

- Population and Human Health (Chapter 4);
- Material Assets: Traffic (Chapter 12).

10.9.1 Population and Human Health

In this EIAR, the Noise and Vibration chapter has been developed in close coordination with the Population and Human Health chapter to assess the potential effects of noise on NSLs. The location of NSLs informed the selection of assessment locations for noise modelling. Predicted noise levels from both the construction and operational phases have been evaluated in terms of their potential effects on human health, including annoyance and disturbance. The integrated approach ensures that the assessment considers, not only technical compliance with noise limits, but also the broader implications for community wellbeing.

10.9.2 Material Assets: Traffic

This chapter incorporates data from the traffic consultants to assess the potential noise effects from both construction and operational traffic associated with the Proposed Development. Annual Average Daily Traffic (AADT), vehicle speed and vehicle types (including HGVs) have been considered to calculate the additional noise generated by the Proposed Development, relative to the baseline conditions. Based on the predicted increase in traffic volumes and traffic levels increasing less than 25%, this will likely equate to an increase of noise levels in the range of 1dB(A). This increase is considered negligible, as the lowest decibel change the human ear can discern is 3dB making this increase negligible in terms of magnitude of change.

10.10 Difficulties Encountered When Compiling

There were no difficulties when compiling this chapter.

10.11 Conclusion

This chapter provides a comprehensive assessment of the potential noise and vibration effects associated with the Proposed Development. It examines both the construction and operational phases, analyses the impacts on human receptors and outlines the necessary mitigation measures to ensure that the project complies with all relevant noise and vibration criteria. The methodology is based on established best-practice guidance from sources such as BS 5228 and the EPA's NG4.

10.11.1 Construction Phase

10.11.1.1 Noise

Based on the unmitigated noise assessment, the construction phase is expected to have a significant, temporary effect on surrounding Noise Sensitive Locations (NSLs). Without mitigation, the predicted noise levels from on-site activities, such as substructure works, are likely to exceed the project criteria of 65 dB(A) $L_{Aeq,T}$ at all NSLs.

- **Quality of Effect:** Neutral
- **Significance:** Significant
- **Duration:** Temporary
- **Probability:** Likely

However, with the implementation of the mitigation measures outlined in Section 10.6, these effects will be properly managed and reduced to acceptable levels. The assessment of

construction traffic noise concludes that the projected increase in vehicle numbers is negligible and will not cause a perceptible or significant increase in noise levels.

10.11.1.2 Vibration

The potential for unmitigated construction vibration is also assessed. While vibration is not anticipated to be a major concern for the majority of the construction period, it is a possibility during the substructure phases due to activities like piling. The effect is determined to be slight in significance, which, according to the binary judgment framework, means it is not significant. This is a temporary effect that is likely to occur. The lack of a major vibration effect is further supported by the sequencing of works, where demolition is completed before the main construction phase begins.

- **Quality of Effect:** Neutral
- **Significance:** Not Significant (Slight)
- **Duration:** Temporary
- **Probability:** Likely

10.11.2 Operational Phase

10.11.2.1 Noise

The assessment of operational noise sources, including the crèche outdoor play area, and public and communal open spaces, concludes that the overall effect on external sensitive receptors will be not significant. The quality of effect is neutral, and the significance is considered slight, with a likely and permanent occurrence.

- **Quality of Effect:** Neutral
- **Significance:** Not Significant (Slight)
- **Duration:** Long-Term
- **Probability:** Likely

The performance specification for the building envelope has been provided in this report which includes the external walls, glazing, roof and ventilation requirements.

10.11.2.2 Vibration

The operational phase of the proposed development is not expected to generate any perceptible vibration. As there are no anticipated sources of significant vibration, the effect is concluded to be neutral in quality and imperceptible in significance. This is a permanent effect, yet its probability of occurrence is unlikely. Therefore, the operational vibration effect on surrounding NSLs will be not significant.

- **Quality of Effect:** Neutral
- **Significance:** Imperceptible
- **Duration:** Long-Term
- **Probability:** Unlikely

10.11.3 Overall Conclusion

The comprehensive noise and vibration assessment concludes that the proposed development's unmitigated construction activities will have a significant adverse effect on surrounding sensitive receptors. However, these impacts are temporary and can be effectively mitigated through the measures detailed in this chapter, reducing the final effect to a not significant level. During the operational phase, the development is not expected to cause any adverse noise or vibration effects on external receptors. The performance specification for the building envelope has been provided in this report which includes the external walls, glazing, roof and ventilation requirements and has taken into consideration road noise, aircraft noise and the internal road within the development. The final residual effect of the proposed development will therefore be not significant with the successful implementation of all mitigation and design measures.

10.12 References

Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);

BS 8233:2014 Guidance on sound insulation and noise reduction for buildings;

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;

BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration;

BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration;

ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;

ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels;

ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere;

ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation;

British Standard BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings;

Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities;

BS 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound;

Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004;

ProPG 2017 Professional Practice Guidance on Planning & Noise;

AAAC: Licensed Premises Noise Assessment Technical Guideline;

NRA Traffic Grid Flow Pattern;

ISO 9613-2: 1996 (Parkplatzlarmstudio 2007);

Calculation of Road Traffic Noise (CoRTN): 1998;

S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations 2018 (hereafter referred to as the Noise Regulations);

S.I. No. 241/2006 - European Communities Noise Emission by Equipment for Use Outdoors (Amendment) Regulations 2006;

WHO Environmental Noise Guidelines (2019).

South Dublin County Council County Development Plan, 2022-2028.

Dublin Agglomeration Noise Action Plan 2024-2028

11 LANDSCAPE AND VISUAL ASSESSMENT

11.1 Introduction

This chapter assesses the effects of the Proposed Development on the landscape and visual amenities of the area and details the potential direct and indirect effects of the Proposed Development on landscape fabric, character and quality, and the resulting impact on visual amenity.

The purpose of this assessment is to evaluate the existing landscape character of the site and surroundings, to assess the visual impact of the Proposed Development and to identify landscape designations and planning policies that may concern the site and its environs.

The Landscape Impact Assessment (LIA) relates to assessing effects on the landscape as a resource in its own right and is concerned with how the Proposed Development will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. The Visual Impact Assessment (VIA) relates to assessing effects on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or the introduction of new elements. Visual effects may occur from visual obstruction (blocking of a view, be it full, partial or intermittent) or visual intrusion (interruption of a view without blocking).

Cumulative landscape and visual impact assessment is concerned with additional changes to the landscape or visual amenity caused by the Proposed Development in conjunction with other developments, or actions that occurred in the past, present or are likely to occur in the foreseeable future

11.1.1 Quality Assurance and Competency of Experts

This chapter has been prepared by landscape architect Dara Hilliard. Dara has a BSc Agric. Landscape Horticulture and is a Member of the Irish Landscape Institute (MILI) and Senior Landscape Architect at DNV. Dara has over 15 years' experience in producing Landscaping and Visual Impact Assessments for developments and over 25 years' experience in the landscape design, management and specification.

This chapter has been approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with over 20 years' experience in consultancy, specialising in EIAs for a range of developments, working closely with a range of developers, planning consultants and architects within the public and private sector.

11.2 Study Methodology

This section sets out the methodology for the Landscape and Visual Assessment (LVA) as a result of the Proposed Development

11.2.1 Guidelines and other information used in the LVIA

The assessment has been undertaken in accordance with best practice, legislation and guidance notes. The methodology used is based on the Environmental Protection Agency *Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Report (2022*) and subsequent Advice Notes, and their precursor *The Guidelines on the Information to be contained in Environmental Impact Statements (2002)* and *Advice notes on current practise in the preparation of Environmental Impact Statements (2003).* It is also based on the Department of the Environment, Heritage and Local Government's Document; *Architectural Heritage Protection, Guidelines for Planning Authorities, 2004* and the Landscape Institute and Institute of Environmental Management & Assessment Document *Guidelines for Landscape and Visual Impact Assessment* (2013).

The aforementioned documents recommend baseline studies to describe, classify and appraise the existing landscape and visual properties, focusing on any sensitive receptors in the area and the ability of the landscape to accommodate the Proposed Development changes that will occur at the Site. This is established through a collective process of desktop study and onsite survey work. Once the baseline conditions are established it allows for the identification of impacts, and an assessment of their magnitude and significance on the landscape character and visual amenities of the area.

A judgement on the sensitivity of the landscape is made from a combination of the susceptibility of the landscape to development, and therefore change, and the value attached to that landscape. This is determined by way of existing designations, both legislative and non-legislative for scenic beauty, landscape quality, recreational value, significant importance, and rarity. Visual sensitivity is determined by a combination of judgements about the susceptibility of visual receptors such as dwellings, roads, scenic spots etc. to changes in visual amenity and the value attached to these views. The *Guidelines for Landscape and Visual Impact Assessment* state that the aim is "*to establish the area in which the development will be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points*".

11.2.2 Terminology

Landscape impacts are defined as changes in the fabric, character and quality of the landscape as a result of the development. This includes direct effects on landscape receptors and indirect effects that can alter the wider distinctiveness of the landscape. Landscape receptors are the physical or natural resource, that will experience an impact. The sensitivity of a landscape receptor is its vulnerability to change.

The extents of landscape effects are assessed by first establishing the baseline conditions by classifying baseline data according to its importance and sensitivity. Secondly, evaluation of the landscape impact on the baseline environment using the terminology defined in Tables 11-1 to 11-4.

For the purposes of this study, the term 'landscape' as applied throughout should be read as being inclusive of the urban fabric of the city and the built environment, or 'townscape'.

Visual impacts relate solely to changes in available views of the landscape and the effects of those changes on people, viewer group or special interest groups. They include the direct impact of the development on views, the potential reaction of viewers, their location and

number and the impact on visual amenity. The intensity of the visual impacts on the baseline visual environment is assessed by using the terminology defined in Tables 11-1, to 11 4.

Table 11-1 The extent of Landscape Impact (based on ratings from the EPA Guidelines, 2022)

Extent	Description
Level 1 Imperceptible Effects	An effect capable of measurement but without noticeable consequences. There are no noticeable changes to landscape context, character or features.
Level 2 Not significant	An effect which causes noticeable changes in the character of the landscape but without noticeable consequences. There are no appreciable changes to landscape context, character or features.
Level 3 Slight Effects	An effect which causes noticeable changes in the character of the landscape without affecting its sensitivities. There are minor changes over a small proportion of the area or moderate changes in a localised area or changes that are reparable over time.
Level 4 Moderate Effects	An effect that alters the character of the landscape in a manner that is consistent with existing and emerging trends. There are minor changes over some of the area (up to 30%) or moderate changes in a localised area.
Level 5 Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the landscape. There are notable changes in landscape characteristics over a substantial area (30-50%) or an intensive change over a more limited area
Level 6 Very Significant Effects	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment. There are notable changes in landscape characteristics over a substantial area (50-70%) or a very intensive change over a more limited area
Level 7 Profound Effects	An effect which obliterates sensitive characteristics. There are notable changes in landscape characteristics over an extensive area (70-100%) or a very intensive change over a more limited area

Visual impacts relate solely to changes in available views of the landscape and the effects of those changes on people, viewer group or special interest groups. They include the direct impact of the development on views, the potential reaction of viewers, their location and number and the impact on visual amenity. The intensity of the visual impacts on the baseline visual environment is assessed by using the terminology defined in Tables 11 -2, to 11-4.

Table 11-2 The extent of Visual Impact (based on ratings from the EPA Guidelines, 2022)

Extent	Description
Level 1 Imperceptible Effects	There are no noticeable changes to views in the visual landscape.
Level 2 Not significant	An effect which causes noticeable changes in the character of the visual environment but without noticeable consequences. The proposal is adequately screened due to the existing landform, vegetation or constructed features.
Level 3 Slight Effects	An effect which causes noticeable changes in the character of the visual environment without affecting its sensitivities. The affected view forms only a small element in the overall visual composition, or changes the view in a marginal manner.
Level 4 Moderate Effects	An effect that alters the character of the visual environment in a manner that is consistent with existing and emerging trends. The proposal affects an appreciable segment of the overall visual composition, or there is an intrusion in the foreground of a view.
Level 5 Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the visual environment. The proposal affects a large proportion of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Level 6 Very Significant Effects	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the visual environment. The proposal affects the majority of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Level 7 Profound Effects	An effect which obliterates sensitive characteristics. The view is entirely altered, obscured or affected.

Table 11-3 Quality of the Landscape and Visual Impact (EPA Guidelines 2022)

Extent	Description
Neutral Effect	Neither detracts from nor enhances the landscape of the receiving environment or view
Positive Effect	Improves or enhances the landscape of the receiving environment or a particular view
Negative Effect	Detracts from the quality of the landscape or view

Table 11-4 The Duration of Landscape and Visual Impact (EPA Guidelines 2022)

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

Please note: "Momentary" and "Brief" Effects as defined in the EPA Guidelines (2022) are not considered relevant to landscape & visual assessment as effects of such short duration are extremely unlikely to generate appreciable effects.

The landscape and visual assessment methodology will be utilised in conjunction with a professional evaluation of the Proposed Development to determine the degree of impact.

11.2.3 Study Area

The term 'study area' as used in this report refers to the site itself (i.e. the extent of the planning application) and its wider landscape context in the study of the context, physical landscape and landscape character. This may extend for approximately 1-5km or more in all directions from the site in order to achieve an understanding of the overall landscape.

As one moves away from any type of development in the landscape, it will become less perceptible with distance. It is common practice to consider the viewpoint distance as laid out in Table 10–5 below.

Table 11-5 Distance and views

Viewpoint Distance	Description
0-2km	It is generally accepted that a development located approximately 2km or less from a viewer would be close enough to allow identification of significant detail. Any positions within this range with open uninterrupted views of a development would generally receive the greatest visual impacts.
2-5km	At this distance, visibility of a development site becomes more general, with viewers in open uninterrupted positions able to identify general form, colour/tone and textural contrast, but losing the more focused detail achievable from closer positions. Impacts at this distance are generally less than those found between 0-2km.
5-10km	Beyond 5km visual prominence quickly diminishes. Certain circumstances/light conditions etc. have potential to allow certain types of development and material finishes to be perceived. The development increasingly becomes part of the general background/distance views. Upwards of 15km distance, developments quickly become minor features within the landscape and considered imperceptible to the average human eye. The impact of the development diminishes as the developments becomes part of the general background/distance views.

In terms of the visual assessment, the study of visual amenity may extend outside the site area, from areas where views of the site are available, but the majority of visual impacts for a development of this nature would be most likely within the local context (c.1km),as the site has reasonable well-developed hedgerows surrounding it and the similar level of lands to the west, north and east as shown in figure 11-1 below. The higher grounds to the south are over 1km away so visibility will be more general and seen against the backdrop of the greater Dublin urban area. This is reflected in the Zone of Theoretical Visibility of a 12m high object in the center of the site (see figure 11-2) where possible visibility is most indicated (bright green hatch) to the south.

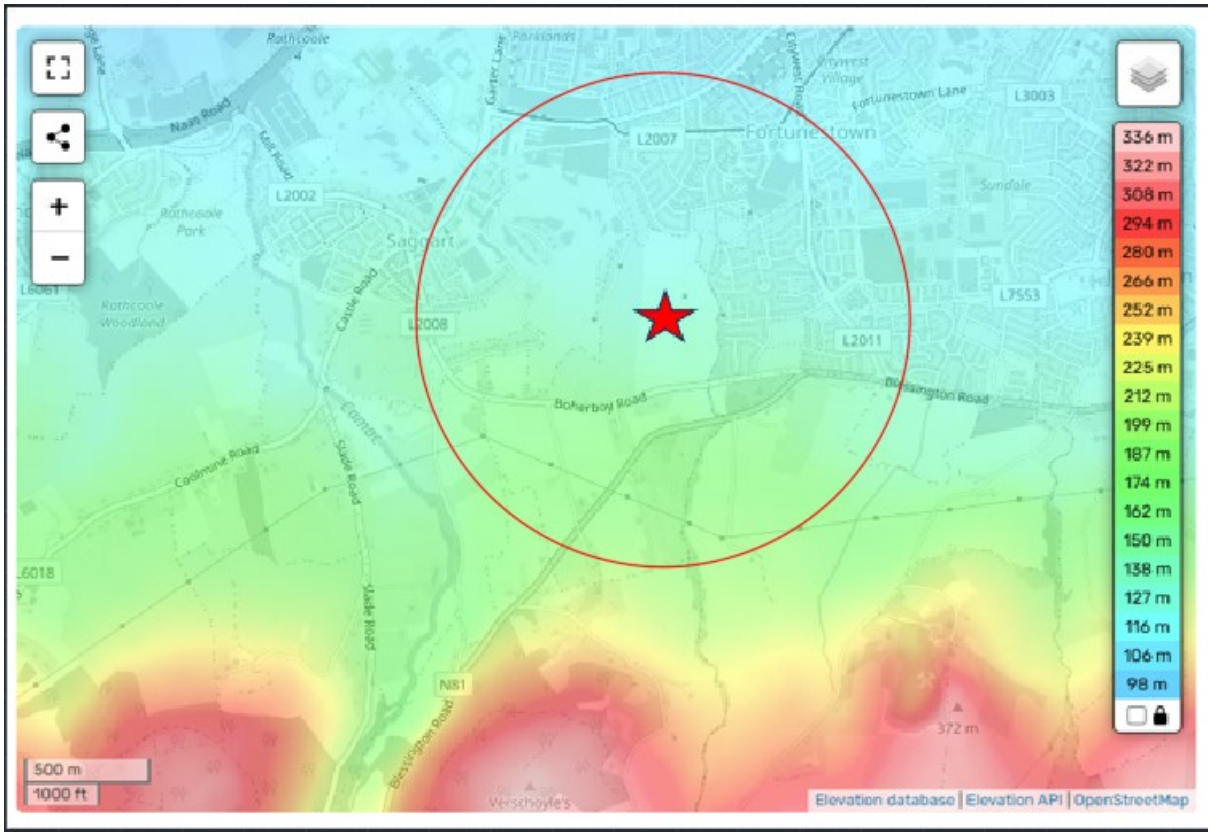

Figure 11-1 Approximate centre of site location (red star), 1km offset (red circle) and surrounding topography.

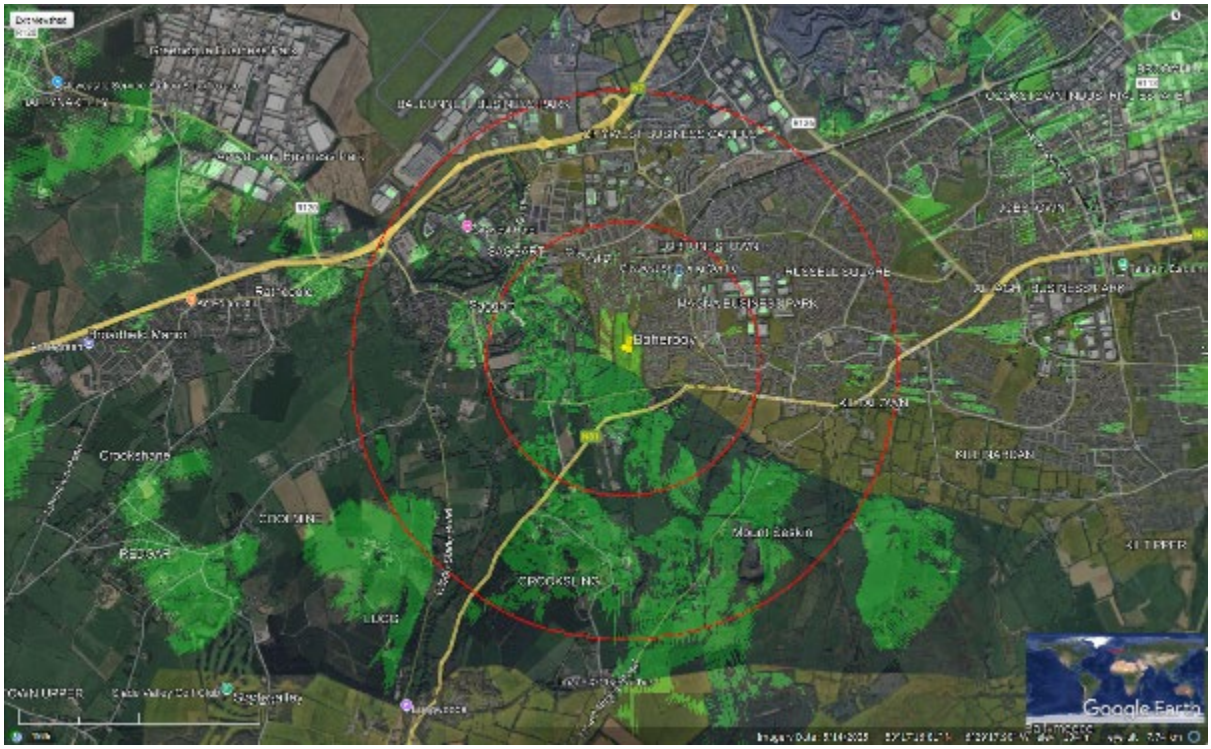

Figure 11-2 Zone of Theoretical Visibility (bright green hatching indicates possible visibility of a 12m object) with 1km and 2km offsets indicated by red circles

11.2.4 Assessment Criteria

The EPA *"Guidelines on the information to be contained in an environmental impact statement"* gives an indication of the range of environmental topics which may be organised under the heading of landscape i.e. character, context, historical landscapes, views and prospects. These headings can be simplified into "Visual impacts" and "Landscape impact". "Landscape impacts" deal with how the character or "feeling" of the area will be affected while "Visual impacts" describes how and whether the development will be visible and how the appearance of the area will change.

There are four key aspects of any impact;

1. its quality/character
2. its significance/magnitude or intensity
3. its duration
4. its consequence (who will be affected and their sensitivity, can it be avoided mitigated or remedied

Tables 11-6 to 11-11 outline the criteria and terminology used to make the landscape and visual impact evaluations in this report.

Table 11-6 Landscape Sensitivity Criteria

Class	Criteria
High	Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character. Landscape designated for its international or national landscape value. Outstanding example in the area of well cared for landscape or set of features
High-Medium	Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character. Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent. Good example in the area of reasonably well cared for landscape with notable landscape features.
Medium	Landscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character. Landscape designated for its local landscape value or a regional designated landscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated landscape which may be valued locally – for example an important open space. An example of a landscape or a set of features which is neutral or mixed character.
Medium - Low	Landscape characteristics or features which are reasonably tolerant of change without detriment to their present character. No landscape designation present or of medium to low local value, or an example of a common or un-stimulating landscape or set of features and conditions.
Low	Landscape characteristics or features which are tolerant of change without detriment to their present character. No designation present or of low local value. An example of monotonous unattractive visually conflicting or degraded landscape or set of features.

Table 11-7 Visual Sensitivity Criteria

Class	Criteria
High	Users of outdoor recreational facilities, on recognised national cycling or walking routes or in national designated landscapes. Dwellings with views orientated towards the proposed development.
High - Medium	Users of outdoor recreational facilities, in locally designated landscapes or on local recreational routes that are well publicised in guide books. Road and rail users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view.
Medium	Users of primary transport road network, orientated towards the Development, likely to be travelling for other purposes than just the view. Dwellings with oblique views of the proposed development.
Medium - Low	People engaged in active outdoor sports or recreation and less likely to focus on the view. Outdoor workers – agriculture, horticulture Primary transport road network and rail users likely to be travelling to work with oblique views of the Development or users of minor road network.
Low	People engaged in work activities indoors, with limited opportunity for views of the Development.

Table 11-8 Landscape Magnitude Criteria

Class	Criteria
Very High	Very extensive, highly noticeable change, affecting most key characteristics and dominating the experience of the landscape; and, Introduction of highly incongruous development.
High	Extensive, noticeable change, affecting many key characteristics and the experience of the landscape; and, Introduction of many incongruous elements.
Medium	Noticeable change to a significant proportion of the landscape, affecting some key characteristics and the experience of the landscape; and Introduction of some uncharacteristic elements.
Low	Minor change, affecting some characteristics and the experience of the landscape to an extent; and, Introduction of elements that are not uncharacteristic.
Very Low	Little perceptible change.

Table 11-9 Visual Magnitude Criteria

Class	Criteria
Very High	The development would dominate the existing view.
High	The development would cause a considerable change to the existing view over a wide area or an intensive change over a limited area.
Medium	The development would cause moderate changes to the existing view over a wide area or noticeable change over a limited area.
Low	The development would cause minor changes to the existing view over a wide area or moderate changes over a limited area.
Very Low	No real change to perception of the view. Weak, not legible, and/ or indiscernible.

Table 11-10 Categories of Landscape and Visual Significance of Impact

Degree of significance	Description of Landscape	Impact Description of Visual Impact
Major	Substantial alteration to elements /features of the baseline (pre-development) conditions. Notably affect an area of recognised national landscape quality. Substantial alteration to the character, scale or pattern of the landscape.	Major/substantial alteration to elements/features of the baseline(pre-development) conditions. Where the proposed development would cause a very noticeable alteration in the existing view. This would typically occur where the proposed development closes an existing view of a landscape of regional or national importance and the proposed development would dominate the future view.
Moderate-Major	This category is a combination of descriptions of Major listed above and Moderate below. These combinations are discussed within the assessment of each landscape or visual receptor when they occur.	
Moderate	Alteration to elements/features of the baseline conditions. Affects an area of recognised regional landscape quality. Alteration to the character, scale or pattern of the local landscape.	Alteration to one or more elements/features of the baseline conditions such that post development character/attributes of the baseline will be materially changed. This would typically occur where the proposed development closes an existing view of a local landscape and the proposed development would be prominent in the future view.
Moderate-Minor	This category is a combination of descriptions of Moderate listed above and Minor below. These combinations are discussed within the assessment of each landscape or visual receptor when they occur.	
Minor	A minor shift away from baseline conditions. The Development partially changes the character of the site without compromising the overall existing landscape character area.	A minor shift away from baseline conditions. This occurs where change arising from the alteration would be discernible but the underlying character / composition / attributes of the baseline condition will be similar to the pre-development. It would also occur where the proposed development newly appears in the view but not as a point of principal focus or where the proposed development is closely located to the viewpoint but seen at an acute angle and at the extremity of the overall view.
Negligible	No or very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable	Where there is no discernible improvement or deterioration in the existing view.
No Impact	The Development would not affect the landscape receptor.	The Development would not affect the view

The significance of identified landscape and visual impacts is established through a simple matrix, which measures the magnitude of change against landscape or visual sensitivity. The resulting impacts are classed Major, Moderate-Major, Moderate, Minor, Negligible/None.

Therefore, as the sensitivity of a landscape increases from Low to High, and the Magnitude of Change increases from Very Low to Very High the predicted impacts also increase.

The example matrix table below is used to summarise the findings from the criteria tables. By combining sensitively (along the top) with predicted magnitude of change (along the side) a predicted impact/ effect is reached. This format is applicable to both landscape impacts and visual impacts.

Table 11-11 Level of Impact resulting from combination of Sensitivity Rating & Magnitude of Change

	Magnitude of Change				
Sensitivity	**Very High**	**High**	**Medium**	**Low**	**No appreciable change**
Very High (IV)	Profound	Very Significant	Significant	Moderate	Slight
High (III)	Very Significant	Significant	Significant	Moderate	Slight
Medium (II)	Significant	Significant	Moderate	Slight	Not Significant
Low (I)	Moderate	Moderate	Slight	Not Significant	Imperceptible
No sensitivity	Slight	Slight	Not Significant	Imperceptible	Imperceptible

11.2.5 Assessing Cumulative Landscape and Visual Effects

Current guidelines suggest that a determination should be made as to whether cumulative effects are likely to occur – these are outlined in the current GLVIA guidelines (3rd edition) as 'the additional changes caused by the proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together'. Such determination needs to be made in respect of any permitted development of a similar nature which will have a bearing on the assessment of the proposed development.

The purpose of assessing cumulative landscape and visual effects is to provide a comprehensive understanding of potential cumulative impacts and to inform decision-making processes, ensuring that the cumulative implications of multiple projects are considered and managed appropriately.

11.3 The Existing and Receiving Environment (Baseline Situation)

11.3.1 Landscape appearance and character

The existing site is in agricultural use as grazing land. The fields slope downwards from south to north with the Boherboy Road forming the southern boundary. The site is split into two distinct parts by a hedgerow that runs north-south. There is also a number of medium scale agricultural sheds on site. There is an electricity pylon and high powered overhead cables running east west, crossing the site mid way down the slope. A small stream bounds the eastern field boundary and another smaller one runs along the site bisecting hedge.

The Boherboy Road feels somewhat rural with native hedgerows close to the road edge and no footpath present. It has numerous single dwellings and industrial/agricultural buildings along its length. This road is at c. 146m OD, and slopes down to the northern end of the site to c. 119m. Housing estates occupy the lands to the east and south, with lower density housing and the Citywest and Hibernain Golf Course to the west. The lands to the south firstly defined by the N81 road and its mixture of commercial and one off housing. As you travel further away from the site the lands become more elevated and are more rural and agricultural in nature with numerous one off houses and medium scale agricultural buildings.

The proposed development is located within the Athgoe and Saggart Hills Landscape Character Area. This is an area classified as having medium to high landscape sensitivity

within the South Dublin County Development Plan 2022-2028 and a limited capacity to accommodate significant change without adverse effects on its character.

Figure 11-3 View looking east along Boherboy road, site on left hand side. Taken near to line of transecting site hedgerow

Figure 11-4 View looking north east from center of site looking at powerlines, adjoining estate and Dublin urban area in the background with tower cranes.

11.3.2 Planning designation and zoning

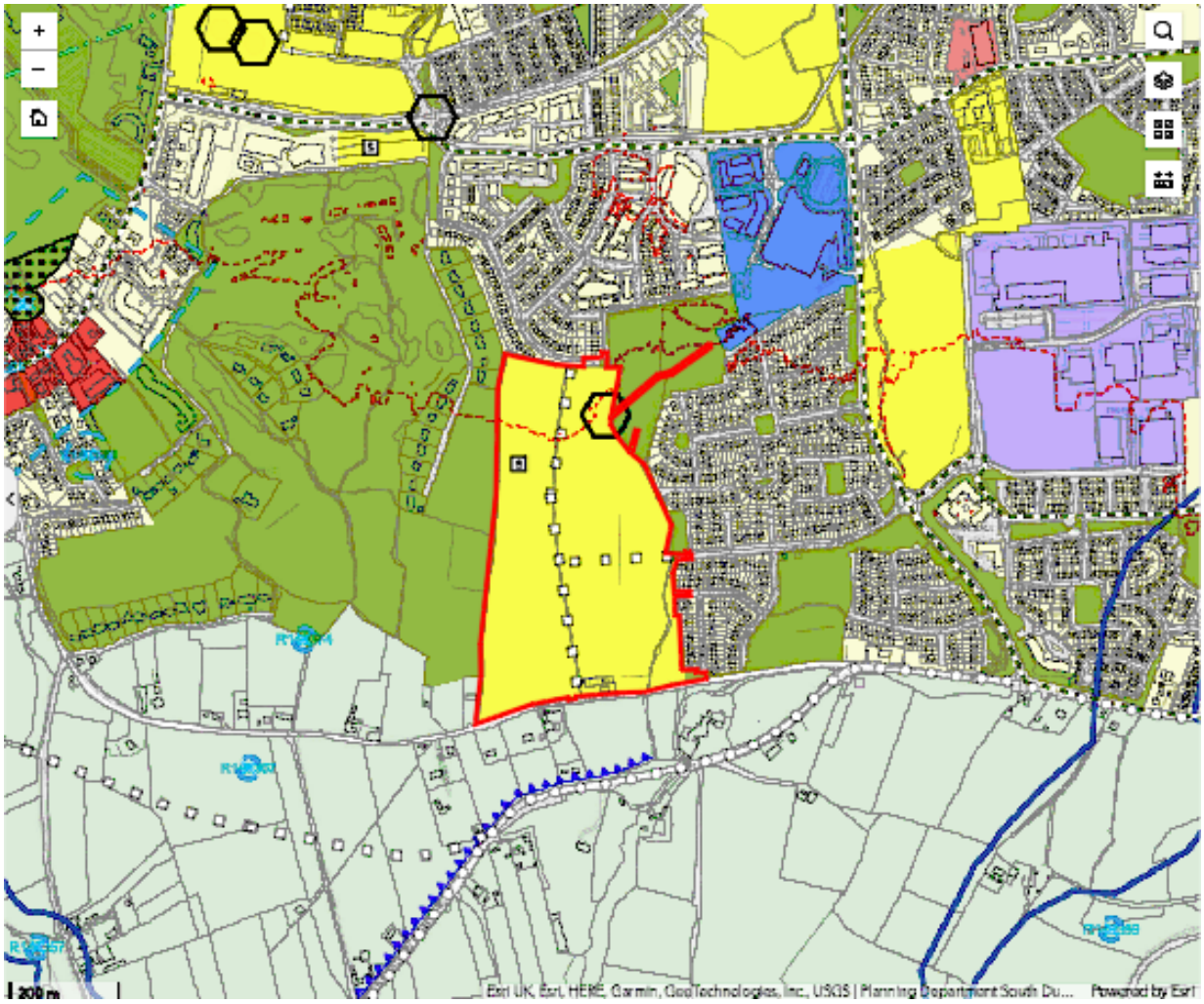

Figure 11-5 Site zoning South Dublin County Development Plan 2022-2028

The site is currently zoned Res-N – New Residential with the objective “to provide for new residential communities in accordance with approved area plans”.

11.3.3 Views and Prospects

There are no protected views or prospects located within or immediately adjacent to the site. The nearest designated prospects are Lugmore / Tallaght Hill, approximately 1.4 km south-east of the site, and Verschoyle's Hill, approximately 1.6 km south-west of the site

Figure 11-6 Proposed protected views and prospects near site

11.4 Characteristics of the Proposed Development

The development will consist of 611 no. dwellings, comprised of 306 no. 2, 3 & 4 bed, 2 & 3 storey, detached, semi-detached & terraced houses, 133 no. 1, 2 & 3 bed duplex units in 12 no. 2-3 storey blocks, and 172 no. 1, 2 & 3 bed apartments in 5 no. buildings ranging in height from 4-5 & 5 storeys. The proposed development also includes a 2-storey crèche (c.630m²).

Access to the development will by via one no. new vehicular access point from the Boherboy Road, along with vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

The proposed development provides for (i) all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, (ii) public open spaces (c. 2.19Ha), (iii) communal open spaces (c. 4,337sq.m), (iv) hard & soft landscaping and boundary treatments, (v) surface car parking, (vi) bicycle parking, (vii) bin & bicycle storage, (viii) public lighting, and (ix), plant (M&E), utility services & ESB sub-stations, all on an overall application site area of c.18.7Hha. In accordance with the South Dublin County Development Plan (2022-2028), an area of c.1.03Ha within the site is reserved as a future school site.

11.4.1 Construction Phase

The Construction Phase of the Proposed Development will be 5 years which is considered short term in duration (less than 7years) and will be broken down into several phases (see figure 11-6 below).

Figure 11-7 Phasing plan

It will include Site preparation works and construction works to install the necessary infrastructure in 3 phases. The construction activities will include the construction of the set-down area,

During the Construction Phase, the Site landscape will undergo some changes. Expected landscape impacts include:

- A general Site clearance to remove any non-structural materials that are not required for the Proposed Development;
- Some large, brightly coloured earth moving equipment, construction machinery, cranes operating on the Site and construction site offices/facilities, security lighting and fencing, scaffolding etc;
- Change in colour and form of topography due to the excavation and building of the hotel.
- Implementation of proposed planting/landscaping
- Change in character due to change of use
- Building of development

Given its location on zoned residential lands, it is concluded that the Proposed Development will, therefore, have a moderate, neutral to negative and short-term impact on the landscape character of the Site during the Construction Phase. Similar type of impacts occur in this landscape during the building of any medium to large development.

11.4.2 Operational Phase

During the operational phase the expected long-term landscape and visual impacts will become established as the main tree, hedge and shrub elements of the proposed

development establish and grow. The mass of the development will become more broken up and less visible.

In addition, it is worth mentioning that developments that at first might be regarded by the public as notable can be expected overtime to gradually diminish and will be perceived as part of the background with time.

11.5 Potential Effect of the Proposed Development

In order to assess the potential landscape and visual effects of the proposed development, professional opinion and experience was used, along with several verified views were commissioned from a range of potential visual receptors to the site.

Figure 11-8 Verified view locations

Table 11-12 Verified view locations description

View	Description
1	Looking north-east, east of a single house and scrapyard on the Boherboy Road
2	Looking north, directly south of the site on the Boherboy Road
3	Looking west, on the Boherboy Road close to Corbally Glade
4	Looking west from Corbally Heath from the estate road and the boundary to the development.
5	Looking south, from a road adjacent to Carrigmore Park, at the junction of Carrigmore Elms and Carrigmore Green.
6	Looking south, site boundary, from Carrigmore Avenue

View	Description
6a	Looking south, site boundary, from Carrigmore Avenue
7	Looking south, on Fortunestown Lane, outside the entrance road of Carrigmore Glen.
8	Looking south east from the Church Road/ Garters Lane, Saggart village. Outside entrance to the Church Car park (Church of the Nativity of the Blessed Virgin Mary)
9	Looking north, due south of the subject lands on the Blessington Road, N81.
10	N81 @ junction with Meagan's Lane (L7355)
11	Verschoyle Hill (high point)
11a	Verschoyle Hill (midway point)
12	Meagan's Lane (L7355) looking directly north to site
13	From L7377 looking north west

11.5.1 Construction Phase

The construction stage will last approximately 5 years. The expected landscape and visual impacts include:

- Numerous large, brightly coloured earth moving equipment, construction machinery, cranes operating on the site and construction site offices/facilities, security lighting and fencing etc,
- Change in colour and form of topography due to the excavation, removal and storage of soils,
- Removal of existing grass land.
- Creation of areas of hard surfaces (car parks, paths, roads),
- Planting of proposed trees, native hedgerows for biodiversity and urban greening, pollinator friendly planting,

The potential visual impacts during the construction phase will be as described for landscape impacts. Due to the nature of the site and surrounding hedgerows and adjoining buildings, visual impacts will rapidly decrease with distance from the site as intervening buildings and earth ditches and associated growth will mitigate views.

Considering the zoning and emerging trends for such zonings, the construction stage landscape and visual impacts can be considered negative to neutral in quality, very low to high in magnitude, negligible to moderate/major in significance and short term impacts (less than 7 years).

Table 11-13 Construction stage visual/landscape impacts

View	Magnitude	Probability	Duration	Sensitivity	Quality	Significance of Effect
V1	Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
V2	Medium	Likely	Short-Term	Medium	Neutral	Moderate
V3	Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
V4	Low	Likely	Short-Term	Medium	Neutral	Minor
V5	High	Likely	Short-Term	Medium	Neutral	Moderate
V6	Low	Likely	Short-Term	Medium	Neutral	Minor
V6a	High	Likely	Short-Term	Medium	Negative	Moderate
V7	Very Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
V8	Very Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
P9	Medium	Likely	Short-Term	Medium	Neutral	Minor
V10	Very low	Likely	Short-Term	Medium	Neutral	Negligible
V11	Very low	Likely	Short-Term	High	Neutral	Negligible
V11a	Very low	Likely	Short-Term	High	Neutral	Negligible
V12	Very low	Likely	Short-Term	High	Neutral	Negligible
V13	Very low	Likely	Short-Term	Medium	Neutral	Negligible

11.5.2 Operational Phase

As the main tree, hedge and shrub elements of the proposed development establish and grow the mass of the proposed development will become more broken up and less visible. This will further reduce the initial landscape impacts from moderate to minor or negligible.

In addition, it is worth mentioning that developments that at first might be regarded by the public as notable can be expected overtime to gradually diminish and will be perceived as part of the background with time.

Considering the zoning and emerging trends for such zonings, the operational stage landscape and visual impacts can be considered to reduce to, negative to neutral in quality, very low to high in magnitude, negligible to moderate in significance long term impacts.

Table 11-14 Operational stage visual/landscape impacts

View	Magnitude	Probability	Duration	Sensitivity	Quality	Significance of Effect
V1	Very Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
V2	Medium	Likely	Short-Term	Medium	Neutral	Moderate/ minor
V3	Very Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
V4	Very low	Likely	Short-Term	Medium	Neutral	Negligible
V5	High	Likely	Short-Term	Medium	Neutral	Moderate
V6	Low	Likely	Short-Term	Medium	Neutral	Minor
V6a	High	Likely	Short-Term	Medium	Negative	Moderate

View	Magnitude	Probability	Duration	Sensitivity	Quality	Significance of Effect
V7	Very Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
V8	Very Low	Likely	Short-Term	Medium	Neutral	Negligible/ No impact
P9	Low	Likely	Short-Term	Medium	Neutral	Minor
V10	Very low	Likely	Short-Term	Medium	Neutral	Negligible
V11	Very low	Likely	Short-Term	High	Neutral	Negligible
V11a	Very low	Likely	Short-Term	High	Neutral	Negligible
V12	Very low	Likely	Short-Term	High	Neutral	Negligible
V13	Very low	Likely	Short-Term	Medium	Neutral	Negligible

11.5.3 Potential Cumulative Effects

Cumulative impacts can be described as impacts that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions. Given the close proximity of the lands to other established developments, it is reasonable to expect development of the proposed site. With the implementation of the current and future Development Plan Standards it is reasonable to expect the orderly and legible development of the area which mitigates any landscape and visual impacts to a minor or below impact.

11.5.4 “Do Nothing” Effect

The do-nothing impact refers to the non-implementation of the proposed development. The primary effect of this would be that the impacts and effects identified would not directly occur. In the event that the development does not proceed it is very likely that the subject site would be developed in the future in some shape or form, in line with planning. If the site is left in its current state, it will be likely continued to be maintained in its current manner and hence a neutral impact will persist on the existing landscape.

11.6 Avoidance, Remedial & Mitigation Measures

11.6.1 Construction Phase

The key landscape and visual mitigation measures used during the construction phase have been incorporated into the layout of the site and design of the proposed buildings and landscaping as outlined in the architectural drawings and sections and the landscape proposal and report. By responding to the site topography, modulation of the buildings, façade articulation and suitable landscaping for the situation, the buildings are absorbed into the surrounding landscape as demonstrated in sections, verified views and CGI images. A range of materials and building typologies are used to complement the existing types found in the surrounding built environment and landscape.

11.6.2 Operational Phase

As the proposed landscaping matures the larger growing tree species can be expected to grow in this location to significant heights of approximately 10-15m and will grow to be significant landscape features in themselves that will counter balance the tallest part of the development. The smaller growing tree species can be expected in this location to reach 5-10m in height and will counterbalance the smaller scale parts of the proposed development. The retention and reinforcement of most hedgerows will further help mitigate visual and landscape impacts.

11.6.3 "Worst Case" Scenario

The worst-case effects arise when the mitigation measures as proposed substantially fail. As the design and layout is a major part of the mitigation and built into the proposed scheme it is highly unlikely that this would fail. If the proposed development were to start and not be completed it would become subject to local authority actions to remedy the situation. This would result in landscape and visual impacts lasting in the medium to long term as natural regeneration of pioneer species would be expected to grow and help mitigate impacts.

The failure of the proposed landscape mitigation measures is very unlikely as the landscape specifications are based on best practice planting and storage procedures for plant material. Also, if the proposed development is granted, the proposed landscaping will become a part of the plans and particulars of the planning application and as such can be made subject of an enforcement notice by the local authority to rectify the situation.

11.7 Residual Impacts

Despite the implementation of the proposed mitigation and ameliorative measures during the construction phase, the initial development works—such as vegetation clearance and general construction activity—are expected to result in moderate, negative, and temporary residual impacts, particularly for receptors located closest to the site. These effects will diminish rapidly with distance, transitioning to minor or negligible, neutral short-term impacts for more distant receptors.

Upon completion of construction, the initial disturbance and visual change will gradually be softened as the new development becomes established within its setting. Over time, the proposed landscaping and architectural integration will help assimilate the development into the surrounding environment. As a result, the residual impacts on the local landscape and visual character are anticipated to be minor to negligible, with effects becoming negligible and neutral at greater distances, and long-term in duration

11.8 Monitoring

11.8.1 Construction Phase

To ensure the successful implementation of the landscape proposals, detailed tender drawings and specifications will be prepared in line with best practice standards. These documents will outline procedures for tree works, soil handling, planting techniques, and

maintenance requirements. All landscape works will be overseen by a qualified landscape architect to ensure compliance with the design intent and quality standards. Planting operations will be scheduled to take place during the appropriate planting season, following the completion of the main civil engineering and construction activities.

11.8.2 Operational Phase

Monitoring of the mitigation measures will form part of the landscape management plan. Replacement trees, replacement planting and pruning measures will be captured in landscape maintenance plans and are intrinsically linked to the proposed mitigation measures. All landscape works will be in an establishment phase for the initial three years from planting. A landscape maintenance plan/specifications accompanies the planning application. Prior to completion of the landscape works, a competent landscape contractor will be engaged and a detailed maintenance plan, scope of operation and methodology will be put in place

11.9 Interactions

In terms of interactions, the impact on the landscape relates to many of the impact areas considered. In the current context, the most significant interactions are considered in the following Chapters:

- Population and Human Health

The enhanced landscape design contributes positively to local amenity, supporting mental well-being and encouraging outdoor recreation and tourism.

- Biodiversity

Proposed landscape planting and green infrastructure can enhance habitat diversity and support ecological connectivity across the site.

- Land and Soils

There is an impact on landscape but it is consistent with the prevailing planning policy context and sustainable development objectives enunciated in international, national, regional and local policy and the impact can be considered moderate.

11.10 Difficulties Encountered When Compiling

No significant difficulties were encountered during the landscape and visual impact assessment.

11.11 Conclusion

It is concluded that the Proposed development will not result in and significant landscape or visual impacts.

Considering the zoning and emerging trends for such zonings, the construction stage landscape and visual impacts for the Proposed Development can be considered negative to neutral in quality, very low to very high in magnitude, negligible to moderate/major in significance and short term impacts (less than 7 years).

The operational stage landscape and visual impacts can be considered to reduce to, negative to neutral in quality, very low to medium in magnitude and negligible to moderate in significance and long term impacts.

There is an impact on landscape but it is consistent with the prevailing planning policy context and sustainable development objectives enunciated in international, national, regional and local policy and the impact can be considered neutral in quality, medium in magnitude, moderate in significance, and long term impacts.

11.12 References

- 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 (EIA Directive);
- The National Landscape Strategy (NLS) for Ireland 2015-2025.;
- Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (2022 (EPA Guidelines 2022)
- Guidelines for Landscape and Visual Impact Assessment, 3rd edition, 2013 (GLVIA), published by the Landscape Institute;
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, 2018, published by the Department of Housing, Planning and Local Government;
- Technical Information Note on Townscape Character Assessment, 2016, published by the Landscape Institute;
- Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19, published by the Landscape Institute.
- Transport Infrastructure Ireland Publication no. PE-ENV-01101, published December 2020: Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects - Overarching Technical Document
- South Dublin County Council County Development Plan 2022-2028

12 ARCHAEOLOGY AND CULTURAL HERITAGE

12.1 Introduction

This chapter has been prepared to assess the impact, if any, on the archaeological, and cultural heritage resource by the proposed construction of no.611 residential units ranging in height from 2 to 5 storeys, a 2 storey creche and a c. 1ha site for a new school, on lands north of Boherboy Road, approximately 2Km south-west of Tallaght Town Centre, within the townland of Boherboy, Saggart, Co. Dublin.

This study determines, as far as reasonably possible from existing records and new surveys (geophysical survey and test trenching), the nature of the archaeological and cultural heritage resource in and within the study area of the proposed development using appropriate methods of study. The study area is defined as an area measuring c. 500m from the proposed development. Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic, and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets. As noted above, ground investigations were also conducted to inform this assessment.

This leads to the following:

- Determining the presence of known archaeological/cultural heritage assets that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the effect upon the setting of known cultural heritage sites in the surrounding area; and
- Suggested mitigation measures based upon the results of the above research.

Definitions

In order to assess, distil and present the findings of this study, the following definitions apply.

‘Cultural Heritage’ where used generically, is an over-arching term applied to describe any combination of archaeological, architectural, and cultural heritage features, where –

- the term ‘archaeological heritage’ is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places).
- the term ‘cultural heritage’, where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

Significance of Effects

Significance of Effects as defined by the Environmental Protection Agency (2022) Guidelines.

Imperceptible: An effect capable of measurement but without significant consequences.

Not Significant: An effect which causes noticeable changes in the character of the environment but without significant consequences.

Slight Effects: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate Effects: An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.

Significant Effects: An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.

Very Significant: An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.

Profound Effects: An effect which obliterates sensitive characteristics.

12.1.1 Quality Assurance and Competency of Experts

The assessment was undertaken by Lucy Bagshaw (BA) and Maeve Tobin (MIAI, MCIfA) of IAC Archaeology. Lucy graduated from The University of Manchester with a BA in Archaeology with Professional Experience (2021) following which she worked as a field archaeologist. Since joining IAC Archaeology in 2024, Lucy has gained experience in the preparation of cultural heritage impact assessments for a variety of largescale residential, commercial, solar farm and infrastructural projects across the country. Maeve graduated from UCC with a BA in Archaeology and Geography (2003) and an MA in Osteoarchaeology (2004), following which she worked as a field archaeologist. Since joining IAC Archaeology in 2007, Maeve has gained considerable experience in the preparation, co-ordination and submission of cultural heritage impact assessments for a variety of largescale residential, commercial, windfarm and infrastructural projects across the country.

12.1.2 Consultations

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment, receiving environment and study area.

- Department of Housing, Local Government and Heritage (DoHLGH) – the Heritage Service, National Monuments: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database and Preservation Orders;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- South Dublin County Council: Planning Section 2022-2028.
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps.

12.1.3 Guidance and Legislation

The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Acts, 1930-2014;
- Planning and Development Act, 2024 (as amended);
- Heritage Act, 1995 (as amended by Heritage Act 2018);

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (EPA 2022). Dublin. Government Publications Office;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands.

12.2 Study Methodology

A study area defined as 500m from the boundary of the proposed development has been examined as part of this assessment. Research has been undertaken in three phases. The first phase comprised a paper survey of all available archaeological, historical and cartographic sources. The second phase involved field inspections of the proposed development site. Programmes of test trenching comprise the third phase of investigation, which inform this assessment.

12.2.1 Paper Survey

The following sources were examined and a list of areas of archaeological, architectural and cultural heritage potential was compiled:

- Record of Monuments and Places for County Dublin,
- Sites and Monuments Record for County Dublin,
- National Monuments in State Care Database,
- Preservation Orders List,
- Topographical files of the National Museum of Ireland,
- Cartographic and written sources relating to the study area,
- South Dublin County Council County Development Plan (2022–2028),
- Aerial photographs,
- Place name analysis,
- Excavations Bulletin (1970–2025).

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as ‘un-located sites’ and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. All recorded archaeological sites are also listed on a website maintained by the Department of Housing, Local Government, and Heritage (DoHLGH) – www.archaeology.ie.

National Monuments in State Care Database is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument. The Minister for the DoHLGH may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint

the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Preservation Orders List contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

The topographical files of the National Museum of Ireland are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

Documentary sources were consulted to gain background information on the archaeological, architectural and cultural heritage landscape of the proposed development site.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey Ireland (OSi) and Google Earth.

Place Names are an important part in understanding both the archaeology and history of an area. Place names can be used for generations and in some cases have been found to have their root deep in the historical past.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The South County Dublin Development Plan (2022-2028) was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development site.

Excavations Bulletin is a summary publication that has been produced every year since 1970. The hard copy publication summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. The information is also available online and includes years from 2011 to the present (www.excavations.ie).

The National Inventory of Architectural Heritage is a state initiative established under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 tasked with making a nationwide record of significant

local, regional, national and international structures, which in turn provides county councils with a guide as to what structures to list within the Record of Protected Structures. The NIAH have also carried out a nationwide desk-based survey of historic gardens, including demesnes that surround large houses.

Field Inspection is necessary to determine the extent and nature of archaeological, architectural, and historical remains and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

- Inspecting the proposed development site and its immediate environs;
- Noting and recording the terrain type and land usage;
- Noting and recording the presence of features of archaeological or cultural heritage significance;
- Verifying the extent and condition of any recorded sites; and
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

12.2.2 Archaeological Test Trenching

Archaeological Test Trenching can be defined as '*a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality'* (CIfA 2020a, 4).

One programme of archaeological testing was carried out within the proposed development site in 2018 (License No. 18E0246). This excavation report could not be located at the time of writing, and all details of previous test trenching were taken from a previous EIAR chapter completed in 2018 (Purcell 2018). The results of these investigations are summarised in Section 12.3.11.

12.2.3 Impact Assessment Methodology

The significance of potential effects has been evaluated using a systematic approach, based upon identification of the importance/value of receptors and their sensitivity to the proposed development activity, together with the predicted magnitude of the impact. This is in accordance with the approach laid out in the "Guidelines on Information to be Contained in Environmental Impact Statements" (EPA 2022).

12.2.3.1 Sensitivity of receptor

For each impact, the assessment identifies receptors sensitive to that impact and implements a systematic approach to understanding the impact pathways, magnitude and the level of effects on given receptors.

The definitions of receptor sensitivity for the purpose of the archaeology, architectural and cultural heritage assessment are provided in Table 12-1. This is based on the presence (or not) of statutory protection and the determination by the author.

Table 12-1: Criteria for determination of receptor sensitivity

Sensitivity	Criteria
Very High	Sites of International Importance: UNESCO World Heritage Properties (excluding tentative list) National Monuments Monuments subject to Preservation Orders
High	RMP Proposed RMP Record of Protected Structures (RPS) Architectural Conservation Area (ACA) UNESCO Cultural Heritage Sites (associated tangible elements only) Well-preserved demesne landscapes Previously unrecorded archaeological sites
Medium	Conservation Areas (CA) SMR Sites listed on the NIAH (upstanding) AAPs identified through documentary or cartographic research. Previously unrecorded archaeological sites (smaller scale/heavily truncated) Dublin City Industrial Heritage Record (DCIHR) sites Sculptures/Memorials/Buildings not on NIAH/RPS (based on professional judgement) Tangible Cultural Heritage Moderately well-preserved demesne landscapes
Low	Lands where previous disturbance may have affected the potential archaeological resource. Sculptures/Memorials/Buildings not on NIAH/RPS (based on professional judgement) Poorly preserved demesne landscapes
Very Low	Modified landscapes where extensive disturbance is known
Neutral	Landscape that that has been the subject of extensive archaeological investigations and/or extensive development. SMR – Record only Proposed RMP – excavated NIAH – demolished

Sensitivity	Criteria
	Fully developed demesne landscapes

12.2.3.2 Magnitude of Impact

The scale or magnitude of potential impacts (both beneficial and adverse) depends on the degree and extent to which the proposed development activities may change the environment, which usually varies according to project phase (i.e. construction, operation and maintenance and decommissioning).

As per the Environmental Protection Agency (EPA) Guidelines, the nature of impacts can be categorised as follows:

- Quality: Positive, neutral or negative
- Nature: Direct, indirect
- Probability: Likely or unlikely
- Duration: Momentary, brief, temporary, short-term, medium-term, long-term, permanent, reversible
- Frequency: Once, rarely, occasionally, frequently, constantly

The criteria used to assess the different impacts associated with the proposed development are shown in Table 12-2 The criteria have been defined in consideration of the “Guidelines on Information to be Contained in Environmental Impact Assessment Reports” (EPA 2022).

Table 12-2: Criteria for determination of magnitude of impact

Magnitude	Criteria
Very High	These impacts arise where an archaeology or cultural heritage site, either below ground or upstanding, is completely and irreversibly destroyed.
High	An impact which, by its magnitude, duration or intensity, alters an important aspect of the archaeological and cultural heritage environment, including the setting of upstanding monuments. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about an archaeological or cultural heritage feature/site. A beneficial or positive impact that permanently enhances or restores the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner.
Medium	A medium impact arises where a change to a site/monument is proposed which though noticeable, is not such that the archaeological or cultural heritage integrity of the site is compromised. The change is likely to be consistent with existing and emerging trends. Impacts are probably reversible and may be of relatively short duration. A beneficial or positive impact that results in partial or temporary enhancement of the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner

Magnitude	Criteria
Low	An impact which causes changes in the character of the environment, such as a visual impact, which are not high or very high and do not directly impact or affect an archaeological or cultural heritage feature or monument. A beneficial or positive impact that causes some minor or temporary enhancement of the character of an upstanding archaeological or cultural heritage structure or feature which, although positive, is unlikely to be readily noticeable.
Very Low	An impact on an archaeological or cultural heritage feature or monument capable of measurement but without noticeable consequences. A beneficial or positive impact on an upstanding archaeological or cultural heritage structure or feature that is capable of measurement but without noticeable consequences.
Neutral	No predicted impact, either negative or positive, to an archaeological or cultural heritage site.

12.2.3.3 Significance of effect

An Impact Assessment Matrix (IAM) is used to determine the significance of an effect. In basic terms, the potential significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact, as shown in Table 12-3.

The matrix provides a framework for the consistent and transparent assessment of predicted effects although it is important to note that the assessments are based on the application of expert judgement.

The matrix provides levels of effect significance ranging from imperceptible to profound. For the purposes of this assessment, potential effects identified to be of significant significance or above (i.e. significant, very significant or profound) are considered to be "significant in EIA terms" and additional mitigation will be required. Potential effects identified as less than significant (i.e. moderate, slight, imperceptible or not significant) significance are generally considered to be not significant in EIA terms.

Table 12-3: Impact assessment matrix for determination of significance of effect

Sensitivity	Magnitude of Impact				
	Very High	**High**	**Medium**	**Low**	**Very Low**
Very High	Profound	Very Significant	Significant	Moderate	Slight
High	Very Significant	Significant	Significant - Moderate	Moderate - Slight	Not Significant
Medium	Significant	Significant - Moderate	Moderate	Slight	Imperceptible

Sensitivity	Magnitude of Impact				
	Very High	**High**	**Medium**	**Low**	**Very Low**
Low	Moderate	Moderate - Slight	Slight	Not Significant	Imperceptible
Very Low	Slight	Not Significant	Imperceptible	Imperceptible	Imperceptible

12.3 The Existing and Receiving Environment (Baseline Situation)

The proposed development site comprises two fields of agricultural farmland measuring c.18.5 hectares in the townland of Boherboy, within the Parish of Saggart and barony of Newcastle, South Co. Dublin (Figure 12-1). The site slopes to the south and has commanding views over the countryside to the north. The site is bounded by Boherboy Road, a third-class road at the south. By a ditch and stream at the east. Housing developments are visible at the east and it is bounded by agricultural land at the west.

The easternmost boundary of the proposed development site also comprises a parish, barony and townland boundary separating Boherboy from the townlands of Corbally and Fortunestown, the parish of Tallaght and barony of Uppercross. This is an historic judicial boundary which comprises the entire eastern extent of the proposed development site (Figure 12-1).

The proposed development site comprises 2 large semi-rectangular shaped arable and pasture fields that fall steeply from south (approx. 155 AOD) to north (approx. 117.5 AOD). The site contains a farmyard and a domestic dwelling in disrepair at the south. These are visible on the first edition OS map. The land was previously subject to the Fortunestown Local Area Plan (LAP). Whilst this document has since lapsed, several of the former LAP requirements have been carried through as Specific Local Objectives (SLOs) within the current South Dublin County Council (SDCC) County Development Plan, 2022-2028.

No recorded archaeological, cultural or built heritage records exist within the bounds of the proposed development site. However, as previously mentioned the easternmost site boundary comprises a townland, parish and barony delineation and is therefore of historic significance.

Within the applied search area of 500m, nine records of archaeological, cultural or built heritage significance are recorded. In summary they comprise two recorded monuments (DU021-044, DU021-045), four NIAH records (11214010, 11214011, 11214012, 11219001), one previous excavation (License No. 18E0246), and two South Dublin Local Heritage Features (Archaeology.ie 2025).

The two recorded monuments and their associated zones of notification comprise St. Patrick's Holy Well located 319m to the west (DU021-045) and a pair of Standing Stones which are also a protected structure and are located 420m southwest-west (DU021-044, Ref. 349).

The village of Saggart is located c.610m to the north-west and is a recorded historic town (DU021-034, SMR 21:34) containing a number of recorded archaeological, cultural and built heritage records.

Archaeological investigations have been carried out in all parcels of land within the application site boundary (Purcell 2018, License No. 18E0246). Test trenching revealed no archaeological finds, features or architectural fragments or artefacts. Testing did reveal extensive land improvements taking place across the site, including hedgerow removal, and watermains associated with Dublin City were present.

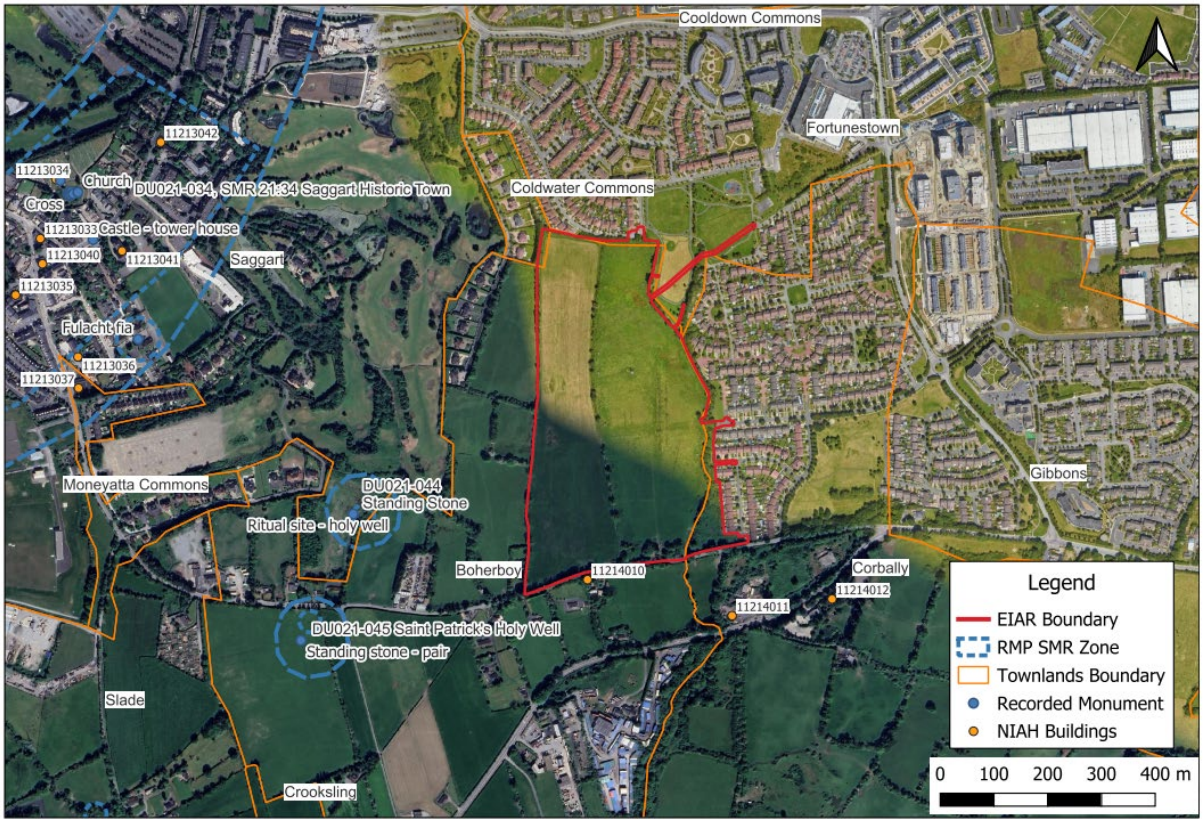

Figure 12-1: Study Area showing cultural heritage assets in the receiving environment

12.3.1 Prehistoric Period

The earliest date for recorded archaeological activity in the vicinity of the proposed development site is the Neolithic period (4000-2500 BC). A pair of standing stones, known locally as the 'Adam and Eve' Stones, are located c. 420m southwest-west of the proposed development site (DU021-044) (Protected Structure ref. 349). Neolithic dates have been tentatively afforded to this monument because of the extensive recorded use of megalithic monumental construction during the Neolithic era.

During the Neolithic communities became less mobile and their economy became based on the rearing of stock and cereal cultivation. The transition to the Neolithic was marked by major social change and with the uptake of monumental construction using stone, referred to as the Megalith. Communities had expanded and moved further inland to form more permanent settlements. This afforded the development of agriculture which demanded an altering of the physical landscape. Forests were rapidly cleared and field boundaries were constructed. Pottery was also being produced, possibly for the first time. The advent of the Neolithic period

also provided the megalithic tomb. There are four types of tomb in Ireland, namely the Court Cairn, Portal, Passage and Wedge; of which the latter style straddles the Neolithic to Bronze Age transition.

The Standing Stone Pair (DU021-044, ref. 349) are recorded as being 1.2m and 1.3m tall and 1.7m apart. The exact date and purpose of the stones are not known, however they comprise one of only a few ascribed 'male-female' pairings in Ireland. Possible interpretations have been afforded to include burial, landscape or event markers, though no evidence has been retained to support any hypothesis.

The transition into the early Bronze Age (c. 2500-800 BC) from the preceding Neolithic period was accompanied by changes in society. Megalithic tombs characteristic of the Neolithic period were replaced in favour of individual, subterranean cist or pit burials that were either in isolation or in small cemeteries. These burials contained inhumed or cremated remains and were often, but not always, accompanied by a pottery vessel.

Although outside of prescribed search area, Bronze Age activity is limited to the discovery of a Fulacht fia and cremated remains which was revealed during excavations in the nearby village of Saggart c.610m to the north-west (Doyle 2001. License No. 01E0329).

Over 7,000 Fulacht fia or burnt mound sites have been recorded in the country of which over 1,500 examples have been excavated, making them the most common prehistoric monument in Ireland (Waddell 2022, 164). Although burnt mounds of shattered stone occur as a result of various activities that have been practiced from the Mesolithic to the present day, the Bronze Age has long been believed to have seen the peak of this activity. Dating evidence from a growing number of burnt mounds, suggests activities resulting in burnt mounds were being carried over a span of 3,500 years in Ireland (Hawkes 2018). They are typically located in areas where there is a readily available water source, often in proximity to a river or stream or in places with a high-water table. In the field burnt mounds may be identified as charcoal-rich mounds or spreads of heat shattered stones, however, in many cases, the sites have been disturbed by later agricultural activity and are no longer visible on the field surface. Nevertheless, even disturbed spreads of burnt mound material often preserve the underlying associated features, such as troughs, pits and gullies, intact.

It is likely that there was significant continuity in the Iron Age (c. 800BC – AD400), with earlier monuments re-used in many cases. However, there is no such activity recorded within the environs of the proposed development site.

Early Medieval Period (AD 500–1100)

The early medieval period is depicted in the surviving sources as an almost entirely rural based society, divided into territories based on the *túath*, or petty kingdom. This period, with a new religious culture and evolving technologies, saw significant woodland clearance and the expansion of grassland. A new type of plough and the horizontal mill were two innovations that improved agriculture and allowed for the population to increase. Consequently, from c. AD 500 onwards, the landscape became well settled, as evidenced by the profuse distribution of ringforts, a dispersed distribution of enclosed settlements (Stout 1997). There is potential for at least 60,000 such sites to have existed on the island (O'Sullivan et al. 2014, 49). Ringforts were often constructed to protect rural farmsteads and are usually defined as a broadly circular enclosure delineated by a bank and ditch. Ringforts can be divided into three broad categories – univallate sites, with one bank or ditch; multivallate sites with as many as

four levels of enclosing features and platform or raised ringforts, where the interior of the ringfort has been built up. These enclosed sites were intimately connected to the division of land and the status of the occupant. Ringforts comprise the most common monument within South County Dublin and are generally located in areas with commanding views. Despite this, none are noted within the environs of the proposed development site.

Medieval Period (AD 1100–1600)

The piecemeal conquest by the Anglo-Normans of Ireland, which commenced in AD 1169, had a fundamental impact on the Irish landscape. Their presence was strongest in the east of the country, and it is mainly in this region that land was carved up and granted to the newly arrived lords. The main success of the Anglo-Norman occupation was the welding of scattered territories into a cohesive unit through the introduction of the English form of shire government. The rural landscape became a network of manorial centres; these units would generally contain a castle (motte and bailey), a manorial house and a number of dwellings, with extensive surrounding acreage. During the 14th to 16th centuries, tower houses were the typical residence of the Irish gentry and are a common feature in the Irish landscape.

In the wider Dublin area, especially along the nearby ‘frontier zone’ there are a substantial number of tower houses and fortified buildings. This may be in part due to the presence of The Pale, which was defined as a hinterland around the centre of Anglo-Norman rule. During the 15th century the ‘Subsidised Castles Act’ provided grants of ten pounds to encourage the construction of castles to defend The Pale against the native Irish. In the nearby village and Historic Town of Saggart c.610m to the west (DU021-034----, SMR 21:34), a Tower House is noted within the Record of Protected Structures (ref. 292). It is likely that the house and its associated outbuildings and gateways are an example of this practice within the environs of the proposed development site.

Another prolific medieval tradition in Ireland is that of the ‘Holy Well’, a common ritual site associated with the uptake of Christianity between the 5th and 16th century AD (McHugh 2023). Holy Wells are difficult to date because of their prolonged periods of use, however, they are commonly referred to as a Medieval phenomenon. Holy Wells are numerous in Ireland with over 3000 recorded. They are often dedicated to Saints or Kings, take many forms and display varying degrees of preservation (ibid.). a Holy Well dedicated to Saint Patrick is located c.319m west of the proposed development site (DU021-045). It is recorded as a spring well which survives as traces of dry-stone walling and elder bushes (The Schools Collection, N.D). Local folklore says that Saint Patrick used the well to perform baptisms for the parish people, and a defunct alter was used to perform mass in aid of the sick. Robbers supposedly destroyed the alter and local people believed the well became incapable of granting blessings thereafter (ibid.). Saint Patrick’s Holy Well is noted within the record of South County Dublin Heritage Features, as well as a medieval stone trough on Blessington Road c. 334m to the south-east.

Post-Medieval Period (AD 1600–1800)

The ending of the Williamite Wars saw the beginning of a comparative politically calm era, which allowed the country's landowners the security to experiment with the latest styles of architecture without the need to refer to defensive matters. Initially, constraints on available resources resulted in mansions of a relatively modest scale and relatively plain appearance. However, as the Irish aristocracy’s sense of security grew over the following decades, their greater access to wealth helped foster a shift towards more ostentatious buildings. There are

four buildings of architectural or cultural heritage value within the study area (c. 500m), including a Detached Farmhouse (Reg No. 11214010) c. 13m to the south, Embankment House (Reg No. 11214011) c. 125m south, House (Reg No. 11214012) c. 188m south-east, and Farmyard Complex (Reg No. 11219001) c. 488m south-west. All of the buildings date to the late 19th century except for the closest structure to the proposed development site which comprises a derelict detached single-storey farmhouse and dates to the early 19th century.

Although Saggart village lies just outside of the bounds of the prescribed search area (c. 610m west of site), it retains a recorded history that is of archaeological, cultural and built heritage importance. Most of the records pertain to the Medieval and Post Medieval periods (DU021-034----, SMR 21:34). Saggart, or (*Teach Sagard),* Likely began as a monastic site dedicated to the Foundation of Monastery of St Mosacre, later superseded by a Medieval Church (DU021-034002). The settlement became a royal manor after the Anglo-Normal invasion of 1169 (Bradley and King 1987, 290). Located in an exposed position in the borderlands, it was attacked regularly during the 15th and 16th centuries, being captured and burnt completely in 1580 (ibid.). By the mid-17th century, it is depicted on the Downs Survey Map as containing a 'Tower House' castle and the remains of two other castle-like structures (DU021-034010-/011-014), as well as thatched houses and cabins (Ball 1902-20, III, 115). Today, the village contains numerous recordings within the archaeological record. The most noteworthy of these pertain to all previous excavations that unearthed remnants of Saggart's Medieval history, (License Nos. 01E0329, 06E0026, 06E0804, Fulacht Fia DU021-034). All records relating the 7th century Monastery of St Mosacre and later Medieval Church (DU021-034001--013) (NIAH: 11,213,033 – 037, 040-042) (Protected Structure Ref. 328). And lastly, the castle sites noted within historic and cartographic sources (DU021-034010-/011-014) (Protected Structure Ref. 292).

12.3.2 Summary of Previous Archaeological Fieldwork

A review of the Excavations Bulletin (1970–2024) has revealed that no previous archaeological investigations have been undertaken within the applied search area surrounding the proposed development site. However, one programme of archaeological test-trenching was undertaken at the site in 2018 (Purcell 2018, License unknown). Unfortunately, there is no such record of this within the excavations bulletin and a licensing number was not complete within the report itself. Nevertheless, the report states that a total of 11 trenches were opened across the site measuring between 75m and 350m in length and 2m in width. A series of watermains were discovered across the site which provide Dublin City with water however no archaeological finds or features were discovered as a result of the testing (ibid.).

The closest archaeological investigation to the proposed development site took place c. 528m north-east and comprised a testing evaluation in advance of construction of the Luas line to Saggart (Hacket 2008, License No. 08E0792). No finds or features of archaeological significance were recorded during the course of the testing. In the nearby village and Historic Town of Saggart (DU021-034----, SMR 21:34) located c. 610m west of the proposed development site, 12 excavation records exist within the excavations bulletin. Three of those revealed archaeological information pertaining to the Medieval period including evidence of Medieval burgage plots and field systems (License Nos. 06E0804, 14E0026), while two contained evidence of Fulacht Fia (License Nos. 01E0329, 14E0026).

12.3.3 Cartographic Analysis

Down Survey Map, Barony of Newcastle, c. 1655

The Down Survey map of the Barony of Newcastle shows the area of the proposed development is within the parish of Saggart. The parish and barony boundaries follow the same alignment as shown on later mapping, testifying to its considerable antiquity. The easternmost edge of site comprises the parish and barony line between Saggart and Newcastle and Tallaght and Uppercross, further attesting to the considerable antiquity of the eastern extent of the proposed development site. The townland of Boherboy is not annotated or delineated at this time. Castles are illustrated at 'Sagard', likely comprising those within the recorded monuments and Record of Protected Structures (DU021-034010-/011-014) (Protected Structure Ref. 292). No features of archaeological potential are illustrated within the proposed development site.

John Rocque's Map of City and County of Dublin, 1760

The area of proposed development is shown within undeveloped fields of pasture traversed by a watercourse and the barony, parish, and townland boundary to the east. The settlement of Saggart is denoted on this map, as are the townland areas of Coldwater (Commons) and Fortunestown that contemporarily border Boherboy townland to the north. No features of archaeological potential were noted within the region comprising the proposed development site.

John Taylor's Map of the Environs of Dublin, 1816

This map does not include detail on the layout of fields, but it does show main routeways and topographic features. As such the site of proposed development lies within an open space on higher ground than the surrounding lands. A Road is noted passing the proposed development site to the south, annotated as 'New Road', which likely comprises part of the now Blessington Road/ Boherboy Road routeway. No features of archaeological potential are illustrated within the proposed development site.

First Edition Ordnance Survey Map, 1843, scale 1:10560

This is the first detailed historical mapping coverage of the landscape containing the proposed development site (Figure 12-2). It shows the area within part of large irregularly shaped fields situated in Boherboy townland, bordered by a road to the south that is now Boherboy Road, streams to the east and west as well as a stream cutting across the centre of the proposed development site. Saint Patrick's Holy Well is present on this map (DU021-045) located c. 319m west. There are no features or structures of archaeological potential shown within the fields comprising the proposed development site. The townland, parish and barony boundary separating Boherboy from the townlands of Corbally and Fortunestown, the parish of Tallaght and barony of Uppercross is denoted and forms the eastern perimeter of site. Small agricultural structures are present within fields to the south abutting Boherboy road.

Ordnance Survey Map, 1909, scale 1:2500

There are no changes of note to the site of proposed development by the turn of the 20th century (Figure 12-3). A small cluster of structures remains within the southernmost extent of the proposed development site. Saint Patrick's Holy Well is still present on this map to the west (DU021-045).

Ordnance Survey Map, 1949, scale 1:10560

There are no significant changes to the site of the proposed development on this map.

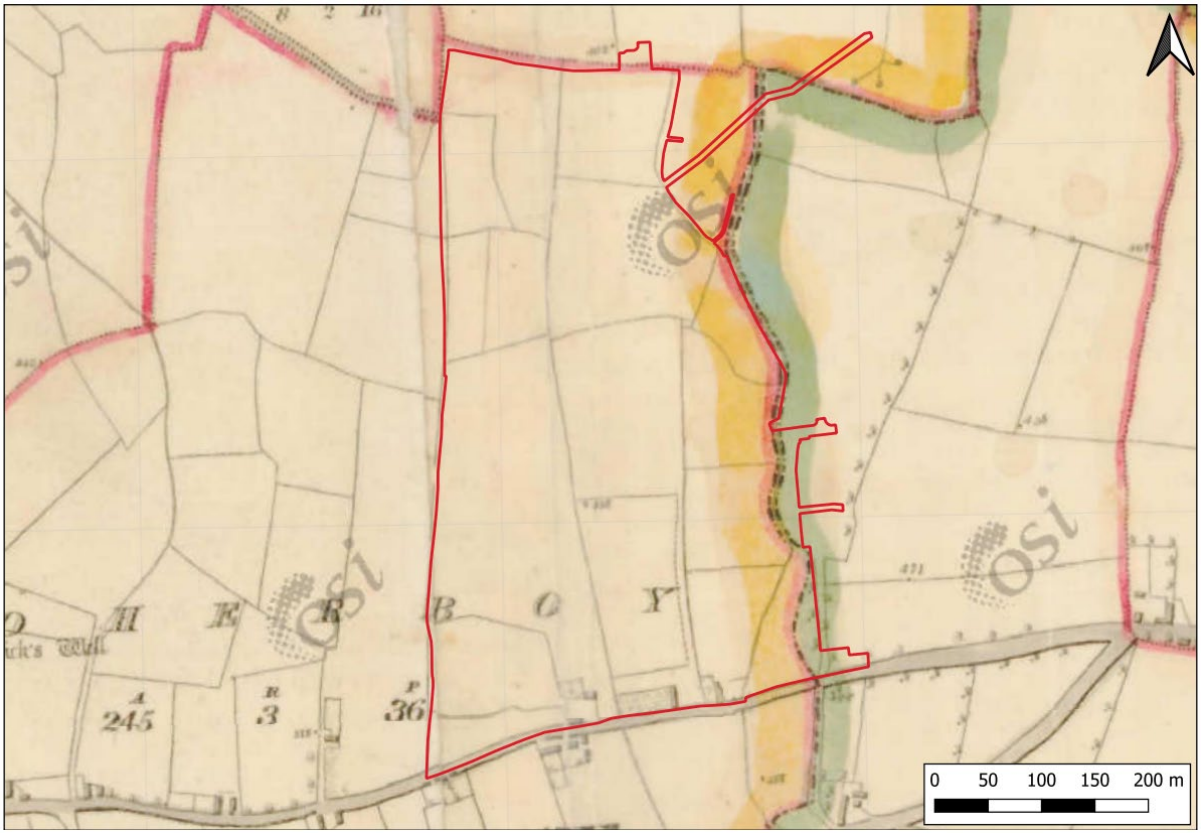

Figure 12-2: Extract from the 1843 OS maps showing the proposed development site

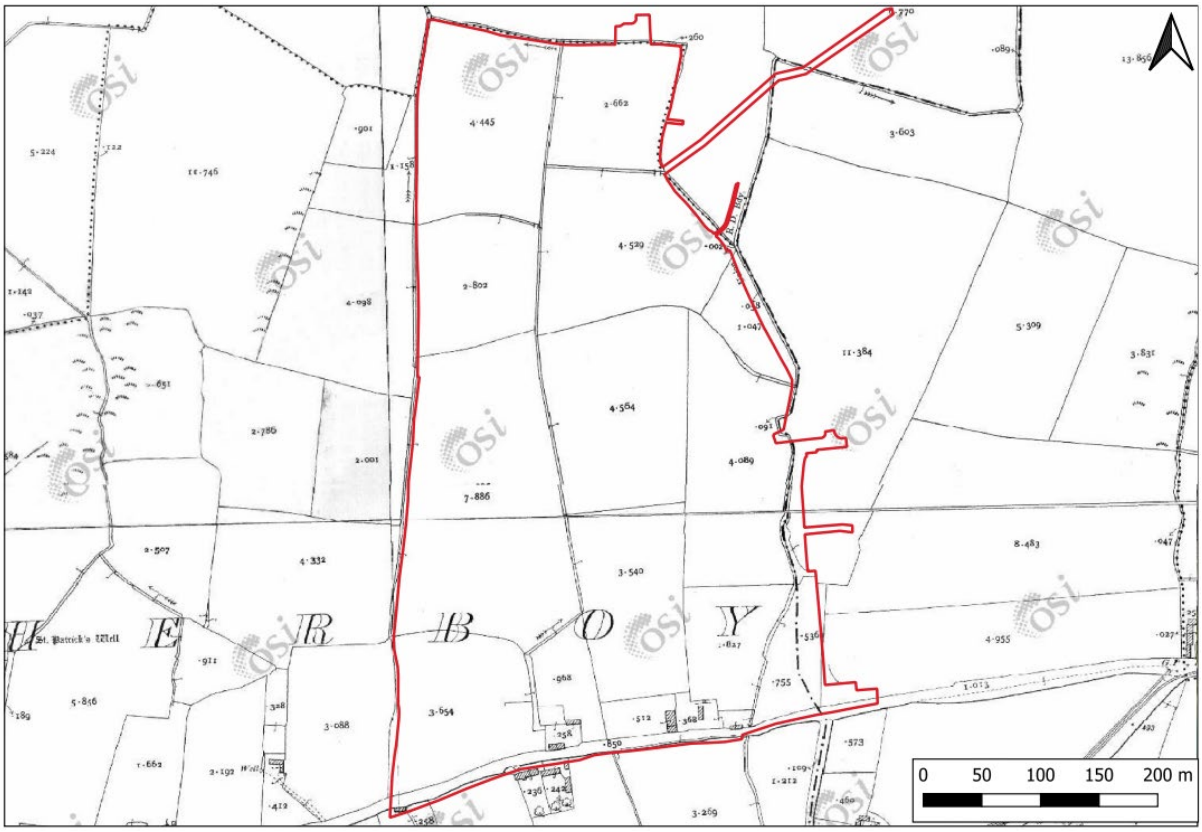

Figure 12-3: Extract from the 1909 OS map showing the site of proposed development

12.3.4 County Development Plan

The South Dublin County Development Plan (2022-2028) recognises the statutory protection afforded to archaeological sites included within the Record of Monuments and Places and seeks to protect those monuments, including their setting, access, views and prospects. The local authority recognises the value and significance of the county's archaeological heritage, and the importance of fostering a greater public appreciation of this heritage. Through policies contained in this Development Plan, they seek to ensure the effective protection, conservation and enhancement of archaeological sites, monuments and their settings (see Appendix 12.1 and 12.2).

The zones of notification for two recorded monuments are recorded within the 500m study area. They comprise St. Patrick's Holy Well located 319m to the west (DU021-045) and Standing Stone pair which is also a protected structure is located 420m southwest-west (DU021-044, Ref. 349). (Table 12-4; Figure 12-1; Appendix 12.1). There are no monuments in State Care within the study area or wider receiving environment.

*Table 12-4: Recorded archaeological sites within study area (*denotes sites that are preserved by record)*

RMP No.	Classification	Townland	Distance to development area
DU021-045	Holy Well	Boherboy	c. 319m west
DU021-044	Standing Stones	Boherboy	c. 420m southwest-west

12.3.5 Townlands

The townland is an Irish land unit of considerable longevity as many of the units are likely to represent much earlier land divisions. However, the term townland was not used to denote a unit of land until the Civil Survey of 1654. It bears no relation to the modern word 'town' but like the Irish word *baile* refers to a place. It is possible that the word is derived from the Old English tun land and meant 'the land forming an estate or manor' (Culleton 1999, 174).

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bogs are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century when land documentation records begin. Many of the townlands are mapped within the Down Survey of the 1650s, so called as all measurements were carefully 'laid downe' on paper at a scale of forty perches to one inch. Therefore, most are in the context of pre-17th century landscape organisation (McErlean 1983, 315).

In the 19th century, some demesnes, deer parks or large farms were given townland status during the Ordnance Survey and some imprecise townland boundaries in areas such as bogs or lakes were given more precise definitions (ibid.). Larger tracks of land were divided into a number of townlands, and named Upper, Middle or Lower, as well as Beg and More (small and large) and north, east, south, and west (Culleton 1999, 179). By the time the first Ordnance Survey had been completed a total of 62,000 townlands were recorded in Ireland.

The proposed development is primarily located within the townland of Boherboy and parish of Saggart. The boundaries between the parishes have some antiquity, shown in similar layout on the mid-17th century Down Survey map. Boherboy townland is bordered by the townlands of Coldwater Commons and Fortunestown to the north, Corbally to the east, and Saggart, Moneyatta Commons to the west. The easternmost boundary of the proposed development site separates the townlands of Boherboy and Corbally/Fortunestown, the baronies of Newcastle and Uppercross, and parishes of Saggart and Tallaght, meaning it represents a land division of considerable antiquity. Today it consists of a large ditch and watercourse bordered by trees and shrubbery (Plate 12-5).

Objective 4 NCBH11 of the South Dublin County Development Plan (2022-2028) states that it is an objective of the County Council to avoid detrimental impacts on historic townland boundaries. Should an historic townland boundary or section thereof be impacted a survey and photographic record should be undertaken prior to removal.

12.3.6 Placename Analysis

Townland and topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They also provide information on the history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830s and 1840s, when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and Logainm.ie. A description and a possible explanation of each townland name in the environs of the proposed development are provided in the below table.

Table 12-5: Townland Name Analysis

Name	Derivation	Possible Meaning
Boherboy	*Bhóthair Bhuí*	Yellow road
Corbally	*Chorrbhaile*	Round hill associated with a town
Fortunestown	*Bhaile Uí Fhoirtcheirn*	Likely derived from a family name or landowner
Coldwater Commons	*Choimín an Uisce Fhuair:*	Commonage areas for medieval nucleated settlements, with water
Saggart	*Tassagard Theach Sagard*	Likely from the Monastery named after St Mosacra, known as Teach Sacra (House of Sacra)
Moneyatta Commons	*Mhóin an Gheata*	Likely derived from the Gaelic móin, mónaidh, meaning bogland, and commonage areas for a medieval settlement

12.3.7 Cultural Heritage

The term ‘cultural heritage’ can be used as an overarching term that can be applied to both archaeology and architecture. The term may also refer to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. No previously unknown cultural heritage sites have been identified during the course of this assessment that relate to the proposed development site; however, the archaeological sites within the study area identified within this assessment possess cultural heritage significance, along with the identified townland boundaries.

12.3.8 Topographical Files

Information on artefact discoveries from the study area in County Dublin has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area. No stray finds are reported from within the study area.

12.3.9 Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development site held by the Ordnance Survey (1995–2013), Google Earth (2008–2024) and Bing Maps revealed no sites of previously unrecorded archaeological potential, in addition to those listed in the SMR. The March 2022 image shown in Figure 12-4 is the most recent good representation of the lands, given cloud coverage in later captures. No previously unrecorded features of archaeological potential have been identified in addition to those already listed in the SMR.

Figure 12-4 Extract from Google Earth (March 2022) showing proposed development site

12.3.10 Field Inspection

The field inspection sought to assess the site, its previous and current land use, the topography and any additional information relevant to the report. The proposed development site was visited during a programme of archaeological testing in 2018 (Licence No. 18E0246), though no record of the excavation report could be located besides summary references within an EIAR chapter from 2018 (Purcell 2018).

The proposed development site was visited in December 2024 to inform this EIAR chapter. The site was visited by Lucy Bagshaw of IAC Archaeology Ltd and conditions were described as damp and overcast. The proposed development site is located in the townlands of Boherboy to south of the Boherboy Road, where gateways provide access to the fields. It comprises the entirety of two large semi-rectangular-shaped sloping arable fields (Plates 12-1–6). The easternmost field contains dilapidated farm sheds and structures to the south and next to the access point on Boherboy Road to the north (Plates 12-1–2).

Five electricity pylons and their associated overhead powerlines were observed cutting the field in an east-west alignment and in three separate locations across the site (Plates 12-3–

4). There is no above ground evidence of any archaeology present within the field. However, the townland, parish and barony boundary to the east comprises a large ditch and stream, lined with mature trees and dense overgrowth, particularly to the north (Plate 12-5).

The westernmost field parcel is also accessed by a farm gate from Boherboy Road to the south. The field comprises of pasture and arable land and it commands considerable views to the north from the south-west corner, the most elevated point within the proposed development site (Plate 12-6). The boundary between both parcels of land comprises a combination of thick hedgerow with sparse open patches and the remnants of fencing and repairs. Overhead powerlines are observed cutting across the site although no pylons are noted within the westernmost field.

Plate 12-1: Southern edge of site containing farm outbuildings, facing northwest

Plate 12-2: Southern edge of site containing outbuildings, facing northeast

Plate 12-3: Eastern field with views to the north, facing north

Plate 12-4: Eastern field facing towards western field, facing west

Plate 12-5: Townland, parish and barony boundary ditch and stream along east of site, facing north

Plate 12-6: Views from the southwest corner of the western field, facing northeast

12.3.11 Test Trenching

A Program of test trenching was undertaken by John Purcell within the proposed development site in May 2018 to inform a previous planning application (License No. 18E0246). The testing report was not available at the time of writing, and the below inoformation was derived from a previous EIAR chapter completed in 2018 (Purcell 2018).

It was reported that a total of 11 test trenches were excavated across the site to maximise the area tested, measuring between c. 75m and c. 350m in length, c. 2m in width, and to a maximum depth of c. 0.75m, covering a total meterage of c. 2095m. A high level trench layout was included in the previous EIAR chapter which is shown in Figure 12.6 of this chapter. However, following a review of the google earth imagery from June 2018, the actual footprint of the excavated test trenches may differ (see Figure 12.7).

Testing revealed extensive land improvements have taken place across the site in the form of hedgerow removal, and a series of watermains were identified crossing the site. In Trench 2, a large water main was observed crossing the central portion of the trench along an east-west axis, likely connecting Poulaphouca Reservoir to Dublin City. No archaeological finds, features, architectural fragments or artefacts were identified during testing.

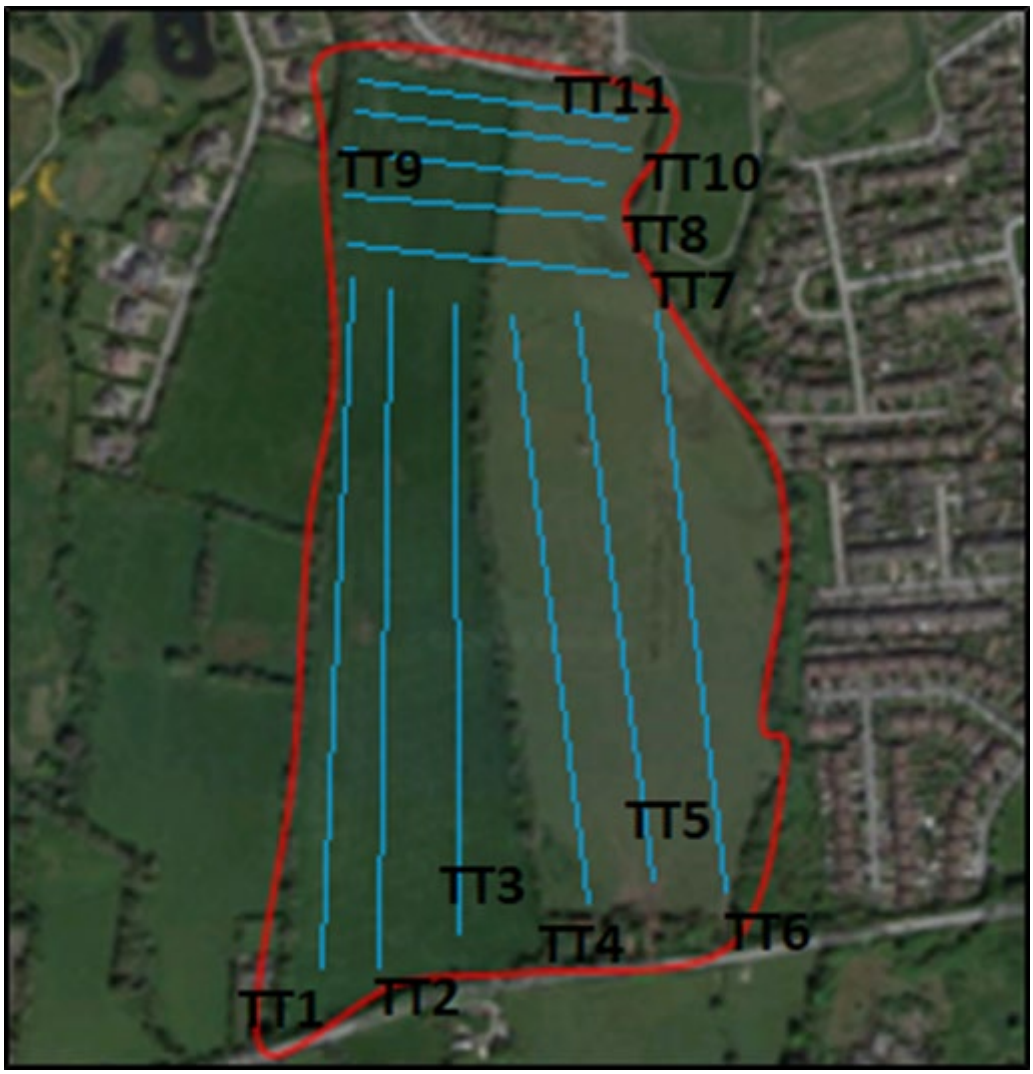

Figure 12-5 Reported location of test trenches excavated in 2018 within the proposed development site (from Purcell 2018)

Figure 12-6 Location of test trenches based on Google Earth 2018

12.3.12 Summary

This assessment has been undertaken in order to assess the potential for the survival of archaeological and cultural heritage features in advance of a proposed commercial development of 611 residential units, a creche and a c. 1ha site for a new school, on lands north of Boherboy Road, c. 2km south-west of Tallaght Town Centre, within the townland of Boherboy, Saggart, Co. Dublin.

This chapter aims to assess the effects of the proposed development during the construction and operational phases on archaeological and cultural heritage features. It has been informed by a desktop baseline review, field inspections, and test trenching. These intensive investigations have shown that the site of proposed development is largely clear of recorded archaeological remains; Previous program of testing revealed extensive land improvements taking place across the site, including hedgerow removal, and watermains associated with Dublin City were deemed present. However, the report was only referred to tentatively due to the omission of complete testing report, which could not be located at the time of writing. Most notably, the eastern border of the proposed development site comprises a townland, parish and barony delineation of considerable antiquity. The easternmost boundary of the proposed development site separates the townlands of Boherboy/Corbally and Boherboy/Fortunestown, the baronies of Newcastle and Uppercross, and parishes of Saggart and Tallaght, and is afforded protections under Objective 4 NCBH11 of the South County Dublin Development Plan (2022-2028).

In addition, the proposed development includes plans for access points on Boherboy Road as well as vehicular, pedestrian and cyclist connections to adjoining developments at Corbally

Heath and Corbally Glade to the east. These proposed works are likely to disturb the extant boundary in regions where the access points are to be constructed.

In the wider receiving environment two features (Holy Well and Standing Stone Pair) relating to the prehistoric Bronze Age have been recorded within The Record of Monuments and Places. Slightly further afield (c.610m west), is the Historic Town of Saggart, which contains an abundance of archaeological, cultural and built heritage records.

Table 12-6: Sites of archaeological potential identified within the proposed development site

ID	Site	Description	ITM
Boherboy and Fortunestown *Townland*	Bordering site to the northeast	This townland boundary runs approximately north-south along the northeastern perimeter of Site	704840, 726722-704875, 726564
Corbally/ Boherboy *Townland* **Uppercross/ Newcastle *Parish*** **Saggart/Tallaght *Barony***	Bordering site to the east	This townland/ parish/ barony boundary runs approximately north–south along the eastern perimeter of Site.	304961, 226133–304964, 226475

Figure 12-07 Location of Archaeological Areas described in Table 12-6

12.4 Characteristics of the Proposed Development

12.4.1 Construction Phase

The proposed development provides for the construction of 584 residential units ranging in height from 2 to 5 storeys, a 2 storey creche and a c. 1ha site for a new school, a new vehicular

access point from the Boherboy Road, along with vehicular, pedestrian and cycle connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, all on an overall application site area of 18.5Ha.

Construction phase shall also include all associated site development works above and below ground, including surface water attenuation & an underground foul sewerage pumping station at the northern end of the site, hard and soft landscaping and boundary treatments. Public open spaces (c. 2.31Ha), including alongside the Corbally Stream, which will accommodate the provision of pedestrian / cyclist links to Carrigmore Park to the north-east, communal open spaces (c. 3,344 m²). Surface car parking (861 surface car parking spaces, including EV parking), bicycle parking (721 no. bicycle parking spaces), bin & bicycle storage, public lighting, and plant (M&E), utility services & ESB sub-stations.

The construction phase of the development will have some interaction with the archaeological and cultural resource, in particular the partial destruction of the extant historic townland, parish and barony boundary that comprises the eastern edge of the proposed development site.

12.4.2 Operational Phase

The operational phase of the proposed development will have no interaction with the archaeological and cultural heritage resource.

12.5 Potential Effect of the Proposed Development

The quality and type of an impact can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022; Appendices 12-4):

- Negative Impact: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological, architectural or cultural heritage site from the landscape;
- Neutral Impact: A change which does not affect the quality of the environment; or
- Positive Impact: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological, architectural or cultural heritage site.

The below terms are used in relation to the archaeological, architectural and cultural heritage and relate to whether a site will be physically impacted upon or not:

- Direct Impact: Where an archaeological/architectural/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and
- Indirect Impact: Where a feature or site of archaeological, architectural or cultural heritage merit or its setting is located in close proximity to the footprint of a development.

12.5.1 Construction Phase

While this assessment has not revealed any archaeological remains within the proposed development, it is possible that previously unrecorded small-scale remains survive beneath the current ground surface, outside the footprint of the excavated test trenches. If present,

ground works associated with the proposed development may have a significant direct negative impact on any such remains.

Table 12-7: Sites of archaeological potential identified within the proposed development site and their predicted impacts

Receptor	Description of the Effect	Sensitivity of Receptor	Magnitude of Impact	Effect (Pre-mitigation)
Boherboy/ Fortunestown boundary	Direct negative impact to the site by groundworks, such as topsoil stripping and excavations associated with the construction of access roads resulting in partial removal of the boundary.	Medium	Medium	Moderate
Corbally/ Boherboy Uppercross/ Newcastle Saggart/Tallaght boundary	Direct negative impact to the site by groundworks, such as topsoil stripping and excavations associated with the construction of access roads resulting in partial removal of the boundary.	Medium	Medium	Moderate

12.5.2 Operational Phase

No negative impacts upon the archaeological or cultural heritage resource are predicted during the operational phase of the proposed development.

12.5.3 Potential Cumulative Effects

After reviewing the nearby projects in relation to the proposed development site, there are no predicted cumulative effects to note during the operational phase of the proposed development.

12.5.4 "Do Nothing" Effect

If the proposed development were not to proceed, there may not be a negative impact on the archaeological and cultural heritage resources, as they will be left undisturbed and *in situ*.

12.6 Avoidance, Remedial & Mitigation Measures

12.6.1 Construction Phase

All topsoil stripping will be subject to archaeological monitoring by a qualified archaeologist under licence from National Monuments Service. Where possible topsoil should be stripped using a flat-edged bucket to facilitate the identification of any potential archaeological remains. This is a requirement of the National Monuments Services licencing process. Should any features of archaeological potential be identified, further mitigation may be required in consultation with the National Monuments Service of the Department of Housing, Local Government and Heritage. This may include preservation *in situ* or by record (excavation).

Proposed intervention points along the townland/ parish/ barony boundary forming the eastern perimeter of the site will be fully recorded by photographic and written record, including measured survey of indicative sections, prior to removal at construction phase. Any subsurface remains of the boundaries exposed during topsoil stripping/excavation will be recorded during the programme of archaeological monitoring. In addition, the proposed landscaping scheme will indicate the former alignment of the townland boundaries, where partial removal is required. Furthermore, the retained townland boundaries will be bolstered by additional planting.

The developer has committed to carrying out the above archaeological strategy as part of the proposed development.

12.6.2 Operational Phase

No mitigation measures during operation are required.

12.6.3 "Worst Case" Scenario

Under a worst-case scenario, the proposed development would have a direct profound negative impact on any previously unidentified archaeological deposits and features without proper excavation and recording being undertaken.

12.7 Residual Effects

Upon the completion of the mitigation measures, there will be no significant negative residual impacts upon the archaeological or cultural heritage resource.

Receptor	Description of the Effect	Sensitivity of Receptor	Magnitude of Impact	Effect (Pre-mitigation)	Mitigation measures	Residual Effect
Construction Phase						
Boherboy/Fortunestown boundary	Direct Negative	Medium	Medium	Moderate	Preservation by record	Negligible
Corbally/ Boherboy Uppercross/ Newcastle Saggart/ Tallaght boundary	Direct negative	Medium	Medium	Moderate	Preservation by record	Negligible

12.8 Monitoring

12.8.1 Construction Phase

No further monitoring mitigation is required in addition to that set out in section 12.6.1.

12.8.2 Operational Phase

There is no further mitigation required during this phase of works.

12.9 Interactions

There are no interactions to note for the proposed development.

12.10 Difficulties Encountered When Compiling

No difficulties were encountered during the preparation of this chapter.

12.11 Conclusion

This assessment has been undertaken in order to assess the potential for the survival of archaeological and cultural heritage features in advance of a proposed commercial development of 584 residential units, a creche and a c. 1ha site for a new school, on lands north of Boherboy Road, c. 2km south-west of Tallaght Town Centre, within the townland of Boherboy, Saggart, Co. Dublin.

The assessment has revealed nine records of archaeological, cultural or built heritage significance are recorded within the 500m applied search area. In summary they comprise two recorded monuments (DU021-044, DU021-045), four NIAH records (11214010, 11214011, 11214012, 11219001), one previous excavation (License No. 18E0246), and two South Dublin Local Heritage Features (Archaeology.ie 2025).

The two recorded monuments and their associated zones of notification comprise St. Patrick's Holy Well located 319m to the west (DU021-045) and a pair of Standing Stones which are also a protected structure and are located 420m southwest-west (DU021-044, Ref. 349).

No recorded archaeological, cultural or built heritage records exist within the bounds of the proposed development site. However, the easternmost site boundary comprises a townland, parish and barony delineation and is therefore of historic significance. Any limited intervention points will be subject to a written and photographic record prior to construction.

While no archaeological remains have been identified within the proposed development site, it is possible that previously unrecorded small-scale remains survive beneath the current ground surface, outside the footprint of the excavated test trenches. If present, ground works associated with the proposed development may have a significant direct negative impact on any such remains.

It is recommended that all topsoil stripping be subject to archaeological monitoring by a qualified archaeologist under licence from National Monuments Service. Where possible topsoil should be stripped using a flat-edged bucket to facilitate the identification of any potential archaeological remains. This is a requirement of the National Monuments Services licencing process. Should any features of archaeological potential be identified, further mitigation may be required in consultation with the National Monuments Service of the Department of Housing, Local Government and Heritage. This may include preservation in situ or by record (excavation).

12.12 References

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13 MATERIAL ASSETS – WASTE AND UTILITIES

13.1 Introduction

This chapter of the EIAR was prepared to assess the potential effects of the Proposed Development on material assets including built services and waste.

13.1.1 Quality Assurance and Competency of Experts

This chapter has been prepared by Aisling Jones, Environmental Consultant with DNV. Aisling has a Bachelor of Civil Law degree from University College Dublin and a Master of Science degree in Environmental and Climate Law also from University College Dublin. Aisling has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Windfarm Feasibility Studies, Construction Environmental Management Plans (CEMP)s, Interactions, Mitigation and Monitoring, Material Assets (Waste and Utilities) Chapters of Environmental Impact Assessment Reports (EIAR)s.

This report was reviewed by Grainne Ryan, Principal EIA Consultant at DNV. Gráinne is an Environmental Consultant with over 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Gráinne has a B.A, in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

13.2 Study Methodology

13.2.1 Relevant Legislation and Guidance

The methodology adopted for the assessment takes cognisance of the relevant guidelines, in particular the following:

- Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (2022);
- EPA (2021) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects;
- Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851;
- European Union (Waste Directive) Regulations 2020, S.I. No. 323 of 2020;
- Waste Management Acts 1996 (as amended);
- The National Waste Management Plan for a Circular Economy 2024-2030; and
- South Dublin County Development Plan 2022-2028.

Definitions of key terms such as “Material Assets,” “Waste,” and “Utilities” are applied consistently throughout this chapter in accordance with the EPA EIAR Guidelines (2022). “Material Assets” refers to physical infrastructure and services including energy, water, wastewater, telecommunications, and waste management systems.

Material Assets is a factor whose meaning has evolved over time. In Directive 2011/92/EU, it included architectural and archaeological heritage. Directive 2014/52/EU now includes those heritage aspects under the factor of Cultural Heritage. Material Assets can now be taken to mean built services and infrastructure. Traffic is included because, in effect, traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential are considered under the factor of Land and Soils.

In this EIAR, the Material Assets: Waste and Utilities chapter specifically addresses built services and infrastructure including:

- Surface Water Drainage;
- Wastewater Drainage;
- Water Supply;
- Electrical Supply;
- Gas Supply;
- Telecommunications; and
- Waste.

Impacts on other aspects commonly associated with Material Assets, such as Traffic, Population and Human Health, Air and Climate, are assessed in the following chapters of this EIAR:

- Chapter 4: Population and Human Health;
- Chapter 8: Air Quality;
- Chapter 9: Climate; and
- Chapter 13: Traffic.

Impacts arising from land take and soil sealing, defined as the covering of soil with impervious surfaces such as buildings, roads, and paved areas, are considered under Chapter 6: Land and Soils. These impacts include the loss of soil functions, reduced permeability, and changes to natural drainage and biodiversity. This approach aligns with EPA and European Environment Agency guidance on the treatment of land and soil in environmental assessments.

The scope of work undertaken for the impact assessment included a desk-based study of built services, utilities and waste management infrastructure within the area surrounding the site. The desk study involved collecting all the relevant data for the site and surrounding area, including published information and details pertaining to the Proposed Development provided by the Applicant and the design team.

Information on built assets in the vicinity of the site of the Proposed Development was assembled by the following means:

- ESB Networks Utility Maps;
- Uisce Éireann Utility Plans;
- Gas Networks Ireland Service plans;

- EIR E-Maps;
- Site Specific Flood Risk Assessment (Kilgallen & Partners Consulting Engineers, 2025);
- Drainage and Water Infrastructure Engineering Report (Roger Mullarkey & Associates, 2025);
- Resource and Waste Management Plan (DNV, 2025); and
- Construction Environmental Management Plan (DNV, 2025).
- Energy and Climate Action Statement (BBSC, 2025).

All phases of the Proposed Development were considered in the assessment of potential effects on Material Assets and Waste within the study area. Assessment of the likely effects of features of the Proposed Development, was carried out in accordance with the following codes of practice, guidelines, legislation, and plans:

- ESB Networks National Code of Practice for the Customer Interface Version 5 (2021);
- ESB Networks Construction Standards for MV Substation Buildings (2019);
- Uisce Éireann Code of Practice for Water Infrastructure Connections and Developer Services Design and Construction Requirements for Self-Lay Developments July 2020 (Revision 2);
- IS EN752, Drain and Sewer Systems Outside Buildings;
- Water Services Acts 2007 to 2017;
- CIRIA Report c753 “The SuDS Manual” (2015);
- Section 3.2 of the Urban Development and Building Heights: Guidelines for Planning Authorities (2018);
- Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851;
- European Union (Waste Directive) Regulations 2011 - 2020, S.I. No. 323 of 2020;
- Waste Management Acts 1996 to 2011; and
- National Waste Management Plan for a Circular Economy 2024-2030.

13.2.2 Description and Assessment of Potential Impacts

Impacts vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this chapter is as described in Chapter 1 of this EIAR.

13.2.3 Local and National Waste Action Plans

The National Waste Management Plan for a Circular Economy (NWMPCE) 2024 -2030, sets out the framework for the prevention and management of waste across Ireland. This document is a statutory document underpinned by national and EU waste legislation, and reflects the targets set out for C & D waste in the Waste Framework Directive (WFD).

The strategic vision of the Plan is to rethink the approach to managing waste, and to move towards a 'circular economy' approach where resources are reused or recycled as much as possible, and the overall generation of waste is minimised.

In order to achieve this vision, the Plan has set out a number of specific and measurable performance targets in relation to construction and demolition waste:

- Achieve a 2% reduction per annum is proposed for total construction and demolition waste to achieve a cumulative 12% reduction by 2030 (baseline is 9 million tonnes); and
- Achieve 70% C & D waste sent for reuse, recycling and other recovery of construction and demolition waste (excluding natural soils and stones and hazardous wastes).

The Plan aims to "prioritise waste prevention and circularity in the construction and demolition sector to reduce the resources that need to be captured as waste". In order to achieve the objectives, set out in NWMPCE, it is imperative that robust resource and waste management plans are developed for and designed into the pre-construction, construction and operational phases of the Proposed Development.

For the purposes of this development, the objectives and targets set out in the NWMPCE are addressed through the RWMP and OWMP (DNV, 2025), which outline measures to minimise waste generation and maximise reuse and recovery across all phases of the Proposed Development.

The RWMP and OWMP (DNV, 2025), which support alignment with the NWMPCE, are submitted under separate cover as part of the planning application. These documents have been reviewed as part of this assessment and are referenced throughout this chapter where relevant.

13.2.4 Article 27 of the European Communities (Waste Directive) Regulations 2011

Under Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27), uncontaminated soil and stone free from anthropogenic contamination which is excavated during the construction phase of a development can be considered a by-product and not a waste, if (a) further beneficial use of the material is certain, (b) it can be used directly without any further processing, (c) it is produced as an integral part of the development works and (d) the use is lawful and will not have any adverse environmental or human health impacts (EPA, 2019).

For Article 27 to apply, the beneficial use mentioned in point (a) above must be identified for the entirety of the excavated soil from the Proposed Development prior to its production, with that use taking place within a definite timeframe, for it to be regarded as certain.

13.3 The Existing and Receiving Environment (Baseline Situation)

The site of the Proposed Development is located to the north of Boherboy Road, approximately 2km south-west of Tallaght Town Centre, 1km east of Saggart, 700m south-west of Citywest Shopping Centre and 1.6km south of the N7.

13.3.1 Immediate Surroundings

The site is bounded by residential dwellings to the north and east. The areas to the west and south are predominantly undeveloped, agricultural lands. Three streams cross the site in a north south direction. These are the Corbally Stream, the Cooldown Stream and the Coldwater Stream. There are also a number of hedgerows running both around the edges of the site as well as through the site itself. The site falls steeply from south (approx. 155 AOD) to north (approx. 117.5 AOD).

The site of the Proposed Development consists of open fields used for agriculture. To the immediate north of the site is the Carrigmore residential estate, to the west are agricultural lands and a single dwelling, to the east is the Corbally residential estate and Carrigmore Park while to the south is the Boherboy Road.

13.3.2 Surface Water Drainage

Within the site, there is currently no surface water network. According to the 'Drainage and Water Infrastructure Engineering Report' prepared by Roger Mullarkey & Associates a topographical survey was carried out on the site and indicates that the lands slopes sharply downwards from the south end of the site towards the north. The existing ground level gradients range from 1/7 to 1/30 generally. There is an approximate drop in level of 38m from the highest portion (SW) of the site to the lowest point (NW). The existing ground topography forms a natural catchment with approximately 75% of the site draining towards the north-west and the remainder draining towards the north-east of the lands. All catchments drain to existing natural watercourses either side of the site.

13.3.3 Wastewater Drainage

There are no wastewater management requirements at present, and there are no known public drainage services on the site of the Proposed Development. There is no foul water sewer located on the subject lands. (Mullarkey & Associates, 2025)

13.3.4 Water Supply

There is no water supply or demand at present on site. According to the 'Drainage and Water Infrastructure Engineering Report' prepared by Roger Mullarkey & Associates there are 3 No existing watermains (4inch uPVC/400mmDI/600mmDI) on Boherboy Road along the site frontage. This application proposes to make a new water connection to the Boherboy watermain in the Boherboy Road.

There are 5 No existing trunk watermains crossing the subject land. A 1.2m Ø (1982 Concrete), a 27inch Ø (1938 Steel) and a 24inch (AC 1975) lie parallel to each other in the northern third of the site and also a 1.2m Ø (1983 Concrete) and 24inch Ø (1952 Cast Iron) lie parallel approximately in the middle of the site. Please refer to drawing No.1324D/412-415 for location of these existing trunk watermains. (Mullarkey, 2025).

These trunk watermains are in the control of Uisce Éireann. The set-back requirements from these mains are in accordance with the Uisce Éireann Code of Practice for Water Infrastructure document and extensive discussions were previously held with Uisce Éireann relating to development in proximity to same. Based on those discussions and design/drawing submissions, UÉ have previously confirmed their approval in issuing a Statement of Design acceptance letter (Ref.CDS20004359). (Mullarkey, 2025).

In order to precisely locate these existing trunk watermains, excavation of silt trenches was carried out with the permission of the then overseeing authority of Dublin City Council and South Dublin County Councils EWCC Dept. All mains were located, surveyed, mapped and the results issued to both SDCC, DCC and Uisce Éireann for their records. Furthermore, GPR (ground penetrating radar) surveys were carried confirming the watermain locations offsite through the SDCC park to the NE of the subject lands. (Mullarkey, 2025).

13.3.5 Electrical Supply

EirGrid develop and operate the national electricity grid and are responsible for taking electricity from the power generators and delivering it to the distribution network, which is operated by ESB Networks. The high-voltage Irish electricity transmission grid comprises 6,800 km of power lines and operates at 400 kV, 220 kV and 110 kV. Substations provide entry points to, and exits from, the transmission grid.

There is existing Electricity Supply Board Networks (ESBN) 38kV & 20kV infrastructure on the site, in the form of overhead 38kV & 20kV cables as highlighted on the ESBN map below. An application has been formally submitted to ESBN to divert the overhead lines on the site. (ENX, 2025)

A number of 110kV stations are located in the area surrounding the site (Citywest, Fortunestown and Cookstown) with the closest being the Citywest Station (EirGrid Group, Transmission System Map, 2025).

13.3.6 Gas Supply

Gas Networks Ireland builds, develops and operates Ireland's gas infrastructure, maintaining over 14,521 km of gas pipelines and two sub-sea interconnectors. Gas Networks Ireland is responsible for connecting all new gas customers to the network, and for work on service pipes and meters at customers' premises, on behalf of all gas suppliers in Ireland.

There is no gas supply at present on site, and none is proposed in the context of the Proposed Development.

13.3.7 Telecommunications

In terms of mobile telecommunication for transmission and reception, there are three mobile mast clusters adjacent to the site. To the northeast of the site is mast No. 41203, to the east of the site is mast No. 41208, and to the west of the site is mast No. 43552.

The Department of the Environment, Climate and Communications (DoECC) has published a High-Speed Broadband Map which identifies locations and premises based on the availability of high-speed broadband services. The site lies across a blue and amber area. A blue area is where "*where commercial operators are delivering or have indicated plans to deliver high speed broadband services. Operators are continuing to enhance their services in these areas to improve access to high-speed broadband*." Amber areas indicate *"target areas for the State intervention under the National Broadband Plan".* (DoECC, 2025).

13.3.8 Waste

The Proposed Development is located within South Dublin County Council's jurisdiction. South Dublin County Council (SDCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. SDCC's waste management activities are governed by the requirements set out in the Eastern-Midlands Region Waste Management Plan 2015-2021, which has since been replaced by the National Waste Management Plan for a Circular Economy 2024-2030. The site is a greenfield site used for agriculture and has no current waste management requirements.

13.4 Characteristics of the Proposed Development

A comprehensive description of the Proposed Development is presented in Chapter 2 of this EIAR.

13.4.1 Aspects Relevant to this Chapter

This section has been prepared following a review of the SSFRA, Drainage and Water Infrastructure Engineering Report, RWMP and other supporting technical documentation submitted as part of the planning application.

13.4.1.1 Surface Water Drainage

The surface water drainage system for the Proposed Development was designed by Roger Mullarkey & Associates Consulting Structural & Civil Engineers in accordance with the Greater Dublin Regional Code of Practice, the GDSDS and CIRIA Report c753 “The SuDS Manual” 2015.

A full SuDS treatment train is proposed in accordance with the CIRIA SuDS Manual. The train comprises:

• Rain Garden planters to the rear down pipes of the houses;

• Permeable paving to all private parking areas draining roads and front roofs of the houses;

• Filter Swales adjacent to roadways where feasible;

• Tree pits where practically feasible;

• Use of the existing centrally located watercourse and hedgerow as a conveyance swale;

• Use of 9No.open detention basins and 1No. below ground system;

• Bio-Retention areas draining roads/paths and roofs;

• Silt-trap/catchpit manholes;

• Hydrobrakes limiting flow to the total Qbar greenfield rate;

• Petrol interceptors upstream of all outfall points;

• Stone lined voided arch retention storage devices

The site is to be drained following a SuDS treatment train philosophy and replicating a nature based solution in providing swales, tree-pits, bio-retention, use of open watercourse, over grassland flow, open detention basins, rain garden planters and permeable paving. All runoff is to be slowed down and treated naturally throughout the SuDS process before been attenuated to the site Qbar greenfield rate and out falling the Corbally stream to the east & north and to the Coldwater watercourse to the west. The S/W drainage is divided into 9No. separate catchment areas, each with its own SuDS interception, treatment, attenuation and storage. There is a potential c.1Ha future school site reserved on the lands that does not form part of this application but has been allowed for in the drainage calculations. (Mullarkey, 2025)

13.4.1.2 Wastewater Drainage

According to the 'Drainage and Water Infrastructure Report' prepared by Roger Mullarkey & Associates a new gravity foul sewer is to be constructed to an existing manhole located in Verschoyle Green via the SDCC lands to the NE of the site. c.25% of the site foul drainage will be pumped from a new pumping station in the NE corner into the proposed new gravity sewer while the remaining 75% flows by gravity in the same main. The 10No.units on the "east" Corbally site will drain foul by gravity into the existing sewer in Corbally Rise. Uisce Eireann have issued a Confirmation of Feasibility for this site noting the proposal was "feasible subject to upgrades".

Due to the sloping topography of the subject lands it is not feasible to drain the apartments on the northern c.20% of the site or potential future school site by gravity. Therefore, a foul water pumping station is proposed as part of this application to drain the above blocks from lower NE corner of the site into the gravity sewer to be constructed connecting into Verschoyle Green. The foul pumping station is to be in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure 2025.

13.4.1.3 Water Supply

According to the 'Drainage and Water Infrastructure Engineering Report' prepared by Roger Mullarkey & Associates the drinking water is to be supplied by a new connection to the existing 400mm watermain on Boherboy Road and distributed throughout the site in 225/180/110mm OD watermains.

Confirmation of Feasibility has been received by Uisce Eireann. Uisce Éireann have issued a Confirmation of Feasibility letter Ref.CDS24005491 for this planning application noting that the water connection is "feasible without infrastructure upgrade" and the wastewater connection is "feasible subject to upgrades". (Roger Mullarkey & Associates, 2025)

As part of the previous applications on this site, extensive consultations were held Uisce Éireann, and detailed design and/drawing drawings were submitted and UÉ subsequently confirmed their approval in issuing the Statement of Design acceptance letter (Ref.CDS20004359) dated 19/08/21. (Roger Mullarkey & Associates, 2025)

Further agreements with UÉ will be made at Connection Application stage in relation to this latest planning application on this site. Prior to lodgement of this current application, full submission documentation has been lodged with UÉ regarding the details of the proposed crossing of the trunk watermains which are similar to that previously approved by UÉ. Upon a successfully grant of planning on the subject site and prior to commencement of development, the Applicants will agree with Uisce Éireann all the necessary protection details as part of the Connection Application process. (Roger Mullarkey & Associates, 2025)

Water demand has also been calculated in the Drainage and Water Infrastructure Engineering Report and are detailed in Figure 13.1.

New Network - DOMESTIC Water Demand								
Usage	Quantity	Occupancy	Population	Consumption (l//h/day)	Ave. Daily Domestic Demand (l/day)	Ave. Daily Domestic Demand (l/s)	Ave. Day/Peak Week (l/s)	Peak Hour Water Demand (l/s)
Resi'	611 Units	2.7 No./Unit	1,650	150	247,500	2.87	3.59	17.94l/s
Peak Hour Water Demand (Domestic)								17.94 /s

Based on Irish Water Code of Practice for Water Infrastructure (Aug'25)
Residential Water Demand Calculations

New Network - COMMERCIAL Water Demand								
Usage	Quantity	Occupancy	Population	Consumption (l//h/day)	Ave. Daily Domestic Demand (l/day)	Ave. Daily(12hr) Domestic Demand (l/s)	Ave. Day/Peak Week (l/s)	Peak Hour Water Demand (l/s)
Possible School Site	1Ha	16 Classes	450	50	22,500	0.52	0.65	3.25
Crèche	630m²	1child/8m² + Staff (20%) + support accommodation	95	50	4750	0.11	0.14	0.69
Peak Hour Water Demand (Commercial)								3.94 l/s

Based on Irish Water Code of Practice for Water Infrastructure (Aug'25)
Commercial Water Demand Calculations

Figure 13.1 Water Demand (Mullarkey & Associates)

13.4.1.4 Electrical Supply

According to the Energy and Climate Action Statement prepared by BBSC, electricity shall be supplied to the development by ESB Networks, once application is made.

It is proposed to divert all existing overhead ESB lines underground. A proposed ducting route is subject to agreement with ESB. (ENX, 2025)

From preliminary investigation and consultation with ESBN it is envisaged that new electricity ducting will tie into an existing MV circuits on neighbouring sites to service the new development. It is anticipated that 8 new plinth mounted ESBN unit substations will be sufficient to service the proposed developments electricity demands. The ESB unit substations in turn will serve a network of minipillars and underground vaults strategically located around the development within footpaths where possible. Individual meters which will be housed in cabinets located on end gable walls of dwelling houses & duplexes where space permits, or on nib walls in terrace dwelling scenarios, will be fed from the minipillars. Apartments will have centralised metering housed within dedicated electrical cupboards located internally within the common area of each block, also served by the minipillar infrastructure. (ENX, 2025)

It is expected that the development, will consume, on peak electrical energy consumption approximately 4,200KVA (3,570KW). However as not all equipment will not be on at the same time the expected live electrical demand will be in the order of 1,850KVA (1,570KW). (BBSC, 2025)

At least 4 or 5 substations, unit type, will be required to service the development. (BBSC, 2025)

All Electrical Vehicles outside of a dwelling curtilage will be powered directly from metered supplies from ESB Networks infrastructure. (BBSC, 2025)

All roofs for all buildings shall be capable of supporting Photovoltaic Units for generation of electricity from solar power. Should all roofs be employed to generate electricity, then the development could offset the electricity import in the order of 1,136,000 kwh/yr or more depending on the panels wattage rating, 450w used to assess. It is noted that panels are currently becoming more efficient as the development of the technology matures, the development could therefore supply more power than that stated above. (BBSC, 2025)

13.4.1.5 Gas Supply

There is no gas supply proposed.

13.4.1.6 Telecommunications

According to the Energy and Climate Action Statement prepared by BBSC, Telecommunications, are to be linked to the existing networks available in the roads, estates and surrounding the area of the Proposed Development.

All telecommunications related works will be carried out in accordance with;

- The Gigabit Infrastructure Act (GIA) 2024
- Guide to the Installation of Telecoms Infrastructure in Residential and Mixed-Use Developments, April 2024 Version 13, Dublin City Council – Telecoms Unit
- South Dublin County Council Section 254 Appliance Licences - Telecommunications Infrastructure
- PAS 2016:2010, Next generation access for new build homes – Guide to telecommunications.
- EIR National standards “Duct Access Technical & Operational Manual”
- Siro National Standards.
- Virgin National Standards “New Build Handbook”

According to the Utility Report prepared by ENX, all utility provider service cables associated with the proposed development shall be located underground where possible. Ducting will be provided to facilitate the provision of broadband infrastructure. All underground chambers shall be suitably traffic rated for the location in which it is intended that they are installed.

All ducts in the development will be vendor neutral. Ducts shall enter the development from each vendors network to a common manhole for distribution around the development. (BBSC, 2025)

The installation of the utilities for the development will be conducted in parallel with the others services being provided to the Proposed Development. (BBSC, 2025)

The development will use fibre spitter panels which typically has extension ports to allow for speedy extension of the network to allow for future development. (BBSC, 2025)

In order to allow for the connection of fibre broadband local street mounted cabinets will be required, as is typical for such installations, as these allow for wiring terminations and other

equipment to allow for connection to the internet. These are typically 850x350x1250mm high and are site agreed once application to connect has been lodged with the users. (BBSC, 2025)

Impact of these critical site preparation works is likely, positive, significant and permanent, will allow for users of the development to be provided with fibre-based broadband, increase commerce and facilitate interconnectivity across communities. (BBSC, 2025)

The existing housing estates, primarily, to the east and north of the developments, existing infrastructure shall be extended into the Proposed Development as is normal practice for developments of this type. (BBSC, 2025)

For network integrity and security the development will install, in ground, vendor neutral ducting to allow for any user to be provided by any vendor. It is proposed to connect to the existing services on the existing roads surrounding the development. Branch offs from this spine shall be brought into the Proposed Development via 110mm Green Ducts. Access to the ducts will be by means of manhole cover junction relay boxes, mounted in ground. (BBSC, 2025)

Telecommunications supply, and the requirement for any alterations to the existing telecommunications network for the Proposed Development, will be agreed in advance of construction with the relevant telecommunications providers. (BBSC, 2025)

Eir, Siro and Virgin will be contacted and on similar projects in the area, have indicated that each entity has no issues with supplying the development with Fibre based telecommunications for broadband. There cables shall be routed in dedicated ducting as described above. Once the vendors enter the development, these ducts shall be common to all providers, please see Figure 2. It shall terminate in an ETU interface module prior to entering the dwelling. 110 denotes 110mm diameter in ground duct. 38 denotes 38mm diameter in ground duct. (BBSC, 2025)

Telecoms shall be to Gigabit Infrastructure Act 2024 with the arrangements for Fibre broadband to dwellings and Apartments requiring common ducting, chambers etc. (BBSC, 2025)

13.4.1.7 Waste

The waste management objectives for the Proposed Development are as follows, and will facilitate material reuse and recycling, where possible, and seek to divert waste from landfill:

- Prevention: The Principal 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) Construction and Environmental Management Plan (CEMP), being an update to the principles set out in the CEMP submitted with this application;
- Reuse: Reusing wastes and surplus materials where feasible and in as many high value uses as possible;
- Recycle: Recycling wastes where possible such as introducing on site crushers to produce waste derived aggregates which, subject to appropriate testing and approvals, may be re-used in the Proposed Development; and

- Disposal: Where disposal of waste is unavoidable, this will be undertaken in accordance with the Waste Management Act 1996, as amended.

13.5 Potential Effect of the Proposed Development

13.5.1 Construction Phase

13.5.1.1 Surface Water Drainage

Construction activities have the potential to cause contamination of surface water runoff with entrained sediment or other contaminants from groundworks areas and stockpiled soils. There will be no unauthorised discharge of water (groundwater or surface water runoff) to ground, drains or water courses during the construction phase. Surface runoff will be managed during construction and there will be no unauthorised discharges of water from the site. However, in the event of a rainfall event, surface runoff entering the open excavations could result in mobilisation of identified hydrocarbon contamination in soil and leaching and migration to groundwater beneath the site. The potential effects will be negative, slight and short term and is considered non-significant in the context of the EIA Directive. Chapter 7 Hydrology and Hydrogeology of this EIAR, has assessed the potential effects on surface water in further detail.

According to the Site-Specific Flood Risk Assessment prepared by Kilgallen & Partners, the Proposed Development is not at risk of flooding and will not increase flood risk elsewhere. The Proposed Development is therefore appropriate from a flood risk perspective.

13.5.1.2 Water Supply

Site offices and construction activities will create a demand for water supply to the site. A temporary connection is required to facilitate on-site works for all housing developments. Commencement of construction will therefore result in a net increase in the water demand for the site. According to the 'Drainage and Water Infrastructure Engineering Report' prepared by Roger Mullarkey & Associates the drinking water is to be supplied by a new connection to the existing 400mm watermain on Boherboy Road and distributed throughout the site in 225/180/110mm OD watermains.

New connection works may cause water supply disruptions during the construction phase. These disruptions will be controlled by UÉ and South Dublin County Council in accordance with standard protocols. Due to the nature of the works during the construction phase, the likely effect will be negative, imperceptible and short-term and is considered non-significant in the context of the EIA Directive. (Mullarkey & Associates, 2025)

13.5.1.3 Electricity Supply

Construction related activities will require temporary connection to the local electrical supply network. The Main Contractor will apply for a power supply from ESB Networks to power both the compound and the construction site. The size of supply will be calculated to ensure it is sufficient to power both the site compounds and construction site activities. A temporary suspension of the network locally to facilitate the connection works may be required during the construction phase, and an additional temporary suspension will also occur when power is provided to the site of the Proposed Development. These temporary suspensions will be

controlled by ESB Networks as the statutory undertaker and in accordance with standard protocols. The potential effect from the construction phase of the Proposed Development on the local electrical supply network is likely to be negative to neutral, slight and temporary, depending on the length of temporary network suspensions, and is considered non-significant in the context of the EIA Directive.

13.5.1.4 Gas Supply

It is not anticipated that there will be a requirement for gas connection during the construction phase.

13.5.1.5 Waste

A Resource Waste Management Plan (RWMP) has been prepared for the Proposed Development by DNV (2025) and has been submitted with the planning application under separate cover. The construction phase will give rise to the requirement to remove and bring quantities of various materials to and from the site. Construction and excavation related wastes will be created during the construction phase. This has the potential to effect on the local waste management network. Waste will also be generated from construction workers e.g., organic/food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. Office and canteen waste, including food waste, will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility.

The potential effect from the construction phase on waste recovery and disposal will be negative, slight and short-term and is considered non-significant in the context of the EIA Directive.

13.5.2 Operational Phase

13.5.2.1 Surface Water Drainage

During operation, the site will have increased impermeable surfaces due to the access roads and houses. Surface water runoff from roads and the impermeable areas of the Proposed Development may contain potentially contaminating compounds (petroleum hydrocarbons, metals, and suspended sediments). Surface water from the Proposed Development will be managed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS). Overall, the likely effect of the surface water drainage strategy for the Proposed Development will be negative, slight and long-term and is considered non-significant in the context of the EIA Directive. Chapter 7 Hydrology and Hydrogeology of this EIAR, has assessed the potential effects on surface water in further detail.

According to the Site-Specific Flood Risk Assessment prepared by Kilgallen & Partners, the Proposed Development is not at risk of flooding and will not increase flood risk elsewhere. The Proposed Development is therefore appropriate from a flood risk perspective.

13.5.2.2 Wastewater Drainage

There is no foul water sewer located on the subject lands. Therefore, it is proposed to service the subject lands by providing a new gravity foul sewer across the SDCC park to the northeast of the site connecting into the existing Uisce Éireann (UÉ) foul infrastructure in Verschoyle Green. This has been agreed with Uisce Éireann and approved by them under Ref.CDS24005491. (Mullarkey & Associates, 2025)

Due to the sloping topography of the subject lands it is not feasible to drain the apartments on the northern c.20% of the site or potential future school site by gravity. Therefore, a foul water pumping station is proposed as part of this application to drain the above blocks from lower NE corner of the site into the gravity sewer to be constructed connecting into Verschoyle Green. The foul pumping station is to be in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure 2025 and is detailed on Dwg.1324B/221. (Mullarkey & Associates, 2025)

Approximately 75% of the foul water drainage system outfalls by gravity flow into the existing Uisce Éireann infrastructure located to the east of the subject site at Verschoyle Green. The lower level c.25% north end of the site incorporates a pumping station to drain the foul via a rising main into the outfalling gravity pipe. Foul drainage for the 10No. “east” Corbally site is to connect to the existing foul drainage in Corbally Rise. Potable water supply for the main site is to be supplied from the existing 400mm DI Uisce Éireann owned infrastructure on Boherboy Road to the south of the site. Water for the 10No. “east” Corbally site is to be supplied from the existing main in Corbally Rise. (Mullarkey & Associates, 2025)

Foul water from the Proposed Development will only be discharged to the ÚE foul sewer under agreement from ÚE and other applicable statutory consents verifying capacity for the Proposed Development. Therefore, it is considered that the likely effect on the water quality from wastewater generated onsite runoff will be negative, imperceptible and long-term and is considered non-significant in the context of the EIA Directive.

13.5.2.3 Electricity Supply

Electricity will be required to provide public lighting, domestic lighting, power supply and heating for each individual unit for the Proposed Development along with electric vehicle parking. The Proposed Development is likely to increase demand on the existing electricity supply network. The potential effect from the operational phase on the electricity supply network is likely to be neutral, imperceptible, and long-term and is considered non-significant in the context of the EIA Directive.

13.5.2.4 Gas Supply

There is no gas supply proposed.

13.5.2.5 Telecommunications

The operational phase will have a marginal increase in demand on the local telecommunications network. The site is located within an area where high speed broadband is available and there are three mobile mast clusters adjacent to the site. The likely effect of the operational phase on the local telecommunications network will be neutral, and imperceptible in the long-term and is considered non-significant in the context of the EIA Directive.

13.5.2.6 Waste

An Operational Waste Management Plan (OWMP) has been prepared for the Proposed Development by DNV (2025) and has been submitted with the planning application under separate cover. The OWMP has been prepared to ensure that the management of waste during the operational phase of the bye laws is undertaken in accordance with current legal and industry standards including the 'Waste Management Act 1996, as amended', and associated Regulations including, 'Protection of the Environment Act 2003 as amended', 'Litter Pollution Act 1997 as amended', the 'National Waste Management Plan for a Circular Economy 2024-2030' and 'South Dublin County Council Waste Management Household and Commercial Waste Bye-laws 2018' (hereinafter referred to as 'the bye-laws').

The operational phase of the Proposed Development will result in an increase in the production of municipal waste in the region and will increase demand on waste collectors and treatment facilities, however, as the surrounding area is urban in nature, waste collection is commonplace. Under the classification system, different types of wastes are fully defined by a code.

The predicted waste types that will be generated at the Proposed Development residential units include the following:

- Mixed Municipal Waste (MMW)/General Waste;
- Dry Mixed Recyclables (DMR) – including cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
- Organic (food) Waste; and
- Glass.

In addition to the typical waste materials that will be generated daily, there will be some additional waste types generated in small quantities that will need to be managed separately including:

- Bulky wastes – including furniture, carpets, mattresses;
- Waste electrical and electronic equipment (WEEE);
- Batteries;
- Textiles – clothes or soft furnishings;
- Light bulbs or fluorescent tubes;
- Chemicals – old medicines, paints, detergents; and
- Waste oil - cooking oil.

All waste collections must take place in compliance with conditions of the Waste Contractor's Waste Collection Permit for the region and in line with the Local Authority bye-laws and the Waste Management (Waste Collection Permit) Regulations 2007 as amended. All residents are obliged by law to avail of the waste management service and must comply with local bye-laws and Statutory Instruments in relation to the presentation of waste for collection. Waste collections for a four-bin system service will be available from the time of first occupancy (i.e. even if all dwellings are not occupied).

A waste collection service will be available to all occupants from first occupancy, irrespective of whether all units have been filled or not.

In all cases, waste collection vehicles will service the bins, and the empty bins will be returned to the Waste Storage Areas. Bins will never be left outside the curtilage of the development. Access and egress of the waste collection vehicles will be in accordance with the Traffic Management Plan for the facility which has ensured the design allows for free-flowing movement of refuse collection vehicles throughout the development. BS 5906: 2005 – Waste Management in Buildings – Code of Practice has been taken into consideration when detailing vehicular access and egress to the development for the purposes of waste collection.

Records of the collections from the apartments and duplexes will be maintained by the management company for the development including reports from the facilities to which the waste is taken. Residents of individual dwellings will be responsible for maintaining their own waste collection records.

All bins in the shared Waste Storage Areas will be accessible for collection by the waste management contractor. It will be the responsibility of the management company to ensure that bins are accessible for collection from the Waste Storage Areas by the waste management operatives and to assist on collection day to wheel out and replace bins during collection where required.

Occupants of residential houses will be responsible for placing their own bins at the kerb for collection, and for the return of those bins to the storage areas within the curtilage of their dwelling in compliance with the SDCC Bye Laws require that kerbside waste presented for collection shall not be presented for collection earlier than 8.00 pm on the day immediately proceeding the designated waste collection day. All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 8:00am on the day following the designated waste collection day.

The waste strategy presented in the OWMP sets out how waste storage and management has been designed in accordance with legal requirements, policies and good management guidelines.

By implementing design and actions outlined in this OWMP, a high level of recycling, reuse and recovery will be achieved at the development in line with European targets. Dry Mixed Recyclables (DMR) and Organic (food) Waste will be segregated at source to reduce the quantity of residual waste materials requiring off-site recovery or disposal.

The source segregation of waste types as detailed in this report will help to achieve the targets set out in the *National Waste Management Plan for a Circular Economy 2024-2030*.

The design of the Waste Storage Areas will meet the requirements as detailed in the "*Sustainable Urban Housing: Design Standards for New Apartments",* July 2023.

The capacity of waste collection companies and waste management facilities in South County Dublin have been designed with forward planning and expansion in mind to cater for a growing population. It is necessary that all the developments provide the infrastructure and services to assist residents to segregate domestic waste at source, in order to reduce the generation and disposal of non-recyclable mixed waste. Existing waste collections currently take place in the local area and during the operational phase, the Proposed Development will be added to an existing collection route. The potential effect from the operational phase on municipal waste

disposal is likely to be long-term, negative and slight in nature and is considered non-significant in the context of the EIA Directive.

13.5.3 Potential Cumulative Effects

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor.

The projects considered for potential cumulative developments are detailed in Chapter 2 of this EIAR.

It is considered that there is no potential for the Proposed Development to act in-combination with other permitted developments in the vicinity that could cause likely significant effects on;

- Surface water drainage;
- Wastewater drainage;
- Water supply;
- Electrical supply;
- Gas supply;
- Telecommunications; and
- Waste.

13.5.4 “Do Nothing” Effect

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.

There would also be no increase in the demand on the existing surface water and wastewater drainage, water, electrical and gas supply or telecommunications. Therefore, the effect on surrounding utilities infrastructure would be neutral.

As the site is zoned for residential development, in the absence of the Proposed Development, it is likely that a development of a similar nature is likely to be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase effects outlined in this assessment are likely to occur in the future, even in the absence of the Proposed Development.

13.6 Avoidance, Remedial & Mitigation Measures

13.6.1 Construction Phase

13.6.1.1 Surface Water

Specific avoidance, remedial and mitigation measures to be taken during the construction phase with respect to surface water drainage are detailed within Chapter 7 Hydrology and

Hydrogeology of this EIAR. All works will be carried out in accordance with the Construction and Environmental Management Plan (CEMP) prepared for the Proposed Development and the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). The construction of any watermains infrastructure will be in accordance with Uisce Éireann standards.

13.6.1.2 Wastewater Drainage

Specific avoidance, remedial and mitigation measures to be taken during the construction phase with respect to foul water are detailed within Chapter 7 Hydrology and Hydrogeology of this EIAR. All works will be carried out in accordance with the Construction and Environmental Management Plan prepared for the Proposed Development and the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). The construction of any wastewater infrastructure will be in accordance with Uisce Éireann standards.

13.6.1.3 Water Supply

Confirmation of Feasibility has been received by Uisce Eireann. Uisce Éireann have issued a Confirmation of Feasibility letter Ref.CDS24005491 for this planning application noting that the water connection is “feasible without infrastructure upgrade” and the wastewater connection is “feasible subject to upgrades”. (Roger Mullarkey & Associates, 2025)

As part of the previous applications on this site, extensive consultations were held Uisce Éireann, and detailed design and/drawing drawings were submitted and UÉ subsequently confirmed their approval in issuing the Statement of Design acceptance letter (Ref.CDS20004359) dated 19/08/21. (Roger Mullarkey & Associates, 2025)

Further agreements with UÉ will be made at Connection Application stage in relation to this latest planning application on this site. Prior to lodgement of this current application, full submission documentation has been lodged with UÉ regarding the details of the proposed crossing of the trunk watermains which are similar to that previously approved by UÉ. Upon a successfully grant of planning on the subject site and prior to commencement of development, the Applicants will agree with Uisce Éireann all the necessary protection details as part of the Connection Application process. (Roger Mullarkey & Associates, 2025)

Utilities providers will be responsible for the management and any required upgrades of water supply and as such no mitigation measures are required. (Roger Mullarkey & Associates, 2025)

13.6.1.4 Electricity

New connections for electricity supply will be coordinated with the relevant utility provider and South Dublin County Council and will be carried out and tested by approved contractors, as per standard protocols and as such no mitigation measures are required.

13.6.1.5 Gas

There is no gas supply proposed and as such no mitigation measures are required.

13.6.1.6 Telecommunications

Any new connections required for telecommunications will be coordinated with the relevant utility provider and South Dublin County Council and will be carried out and tested by approved contractors, as per standard protocols and as such no mitigation measures are required.

13.6.1.7 Waste

The waste management objective will be to prevent waste arising in the first place, and to re-use, recycle or recover waste materials where possible. The following mitigation measures are recommended for the construction phase of the Proposed Development regarding waste management:

- Waste materials will be separated at source and will follow the Resource and Waste Management Plan (RWMP) and Contractor(s) Construction Environmental Management Plan (CEMP);
- Prior to the commencement of the construction phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous;
- A policy of 'as needed' ordering and strict purchasing procedures will be implemented to prevent waste arisings as far as possible;
- The Contractor will vet the source of aggregate, fill material and topsoil imported to the site in order to ensure that it is of a reputable origin and that it is "clean" (i.e., it will not contaminate the environment).
- The Contractor and/or Council will implement procurement procedures to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance;
- The waste materials generated during the construction phase will be stored in suitably size receptables and transferred offsite for appropriate processing, recycling and recovery;
- Waste materials generated from the construction phase that are unsuitable for reuse or recovery will be separately collected;
- Disposal of construction generated wastes will be considered a last resort and only after recycling or recovery options have been ruled out;
- A suitably competent and fully permitted waste management company will be employed to manage waste arising for the construction phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO);
- All waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency;

- It is not envisaged that there will be any hazardous waste generated throughout the construction works however, in the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify South Dublin County Council and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s). Only authorised facilities will be used and as a result of this, the potential effects at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures;
- Waste generated by construction workers will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility; and
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the construction phase.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with provisions of the Waste Management Act 1996, as amended, associated Regulations and Litter Pollution Act 1997, and The National Waste Management Plan for a Circular Economy 2024-2030. The mitigation measures will also ensure optimum levels of waste reduction, reuse, recycling and recover are achieved and will promote more sustainable consumption of resources.

The Contractor will have the responsibility to record resource and waste management at the site in line with the Resource and Waste Management Plan (RWMP). Some of the principal duties and responsibilities of this role include:

- Report to Project Manager on the management of resources and waste at the site;
- Identify all destinations for resources taken off-site;
- Address end-of-waste and by-product notifications with the EPA, where applicable;
- Maintain full records of all resources (both wastes and other resources) for the duration of the project;
- Delegate responsibility to sub-contractors, where necessary;
- Coordinate with suppliers, service providers and sub-contractors; and
- Prioritise waste prevention and resource salvage.

13.6.2 Operational Phase

13.6.2.1 Surface Water

Due to the incorporated design measures relating to surface water, no additional mitigation measures are required. Following planning application stage, connection agreements will be made with Uisce Éireann to ensure water supply to the site and foul water discharge off site and no additional mitigation measures will be required.

13.6.2.2 Wastewater Drainage

Due to the incorporated design measures relating to foul / wastewater, no additional mitigation measures are required. Following planning application stage, connection agreements will be made with Uisce Éireann to ensure water supply to the site and foul water discharge off site and no additional mitigation measures will be required.

13.6.2.3 Water Supply

Confirmation of Feasibility has been received by Uisce Eireann. Utilities providers will be responsible for the management and any required upgrades of water supply and as such no mitigation measures are required.

13.6.2.4 Electricity

Utilities providers will be responsible for the management and any required upgrades of electricity supply and as such no mitigation measures are required.

13.6.2.5 Gas

There is no gas supply proposed and as such no mitigation measures are required.

13.6.2.6 Telecommunications

Utilities providers will be responsible for the management and any required upgrades of telecommunications and as such no mitigation measures are required.

13.6.2.7 Waste

As previously stated, an Operational Waste Management Plan (OWMP) has been prepared by DNV (2025) for the Proposed Development. A waste strategy is presented in the OWMP which considers legal requirements, policies, and best management guidelines. This plan also demonstrates that the Waste Storage Area (WSA) has been incorporated within the design of the Proposed Development.

Implementation of the OWMP will ensure that a high level of recycling, reuse, and recover at the Proposed Development during the operational phase. All materials that are considered recyclable will be segregated and separated at source to reduce costs from the waste collector and ensure maximum diversion of material from landfill. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated WSA will provide sufficient room for the required receptacles in accordance with the details of this strategy.

As outlined in the OWMP, it is intended to ensure that the highest possible levels of waste reduction, waste reuse and waste recycling are achieved for the Proposed Development. Specifically, the OWMP will aim to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible.

It will be a condition of any management contract at the development that adequate budgets are in place for the provision of all required waste management services including a four-bin system for the collection of separate Organic (food) Waste, Dry Mixed Recyclables (DMR), Mixed Municipal Waste (MMW) / General Waste and Glass from the apartments and duplexes.

The Management Company appointed will be required to continually monitor the performance of the waste management system. This will include routine visual checks of the WSAs to ensure that all bins collected are returned to the WSAs and to ensure this area is maintained so as not to cause any environmental nuisance to residents. These checks will also assess if the bins are in good condition or need to be replaced where damage is identified.

Provision for bin cleaning will be included in the contract with the waste management contractor appointed to ensure the provision of bin cleaning services or replacement of clean bins by the waste contractor.

The Management Company will review all annual waste reports from the Waste Collection Company appointed to ensure that the waste collected is in line with the European recycling targets. Where poor recycling rates are noted information leaflets will be recirculated to all residents which will include information on what materials can be recycled and the waste streams that can be placed in bins. Residents will also be reminded of legal obligations where applicable. Further communication strategy to engage tenants and owner occupiers in good waste management practices will be adopted if deemed necessary.

Contingency policies will be in place to ensure continuity of service.

Each appointed Waste Contractor must hold a valid waste collection permit to transport waste which is issued by the National Waste Collection Permit Office (NWCPO). Waste treatment facilities must also be appropriately permitted (Waste Facility Permit or Certificate of Registration) or licensed by the Local Authority or Environmental Protection Agency to accept the waste. The Management Company appointed will be responsible for ensuring that all Waste Contractors hold the appropriate authorisations.

The OWMP has reviewed policy alongside best practice guidance and recommendations for sustainable waste and recycling management arrangements for the Proposed Development and ensures a high level of recycling, reuse and recovery at the development and also ensures that waste management is carried out in accordance with the requirements of the South Dublin County Development Plan 2022-2028 and Ireland's National Waste Policy.

13.6.3 "Worst Case" Scenario

13.6.3.1 Surface Water

A worst-case scenario in relation to surface water would be a failure or blockage of drainage infrastructure resulting in surface flooding. The surface water drainage system has been designed to capture, store and discharge surface water run-off from rainfall events for all return periods up to and including 100 years (with an allowance for climate change). Notwithstanding this, a blockage could occur in the surface water drainage system, leading to the risk of water rising in upstream manholes to the point where the manhole overtops and water overflows on to the surrounding ground. The Proposed Development provides routes for the conveyance of such overflows which ensure that buildings would not be at risk of flooding in this event. Refer to Drg No 1324B/315 Exceedance Overflow Route prepared as part of the surface water drainage design. (Kilgallen and Partners, 2025).

However, taking account of the avoidance and mitigation measures, the worst-case scenario is deemed to be an unlikely scenario.

13.6.3.2 Wastewater

A worst-case scenario in relation to wastewater drainage would be where construction works resulted in an extended disruption to sewerage systems for existing properties in the area due to unforeseen delays on site. However, taking account of the avoidance and mitigation measures, the worst-case scenario is deemed to be an unlikely scenario.

13.6.3.3 Electricity

A worst-case scenario in relation to electricity supply would be where construction works resulted in an extended disruption for existing properties in the area due to unforeseen delays on site. However, taking account of the avoidance and mitigation measures, the worst-case scenario is deemed to be an unlikely scenario.

13.6.3.4 Gas

There is no gas proposed as part of the Proposed Development and therefore a worst-case scenario has not been assessed.

13.6.3.5 Telecommunications

A worst-case scenario in relation to telecommunications would be where construction works resulted in an extended disruption for existing properties in the area due to unforeseen delays on site. Utilities providers will be responsible for the management and any required upgrades of telecommunications and as such no mitigation measures are required.

13.6.3.6 Waste

A worst-case scenario in relation to waste would be where a previously unclassified hazardous waste stream arose on the site during excavations, which was not identified and segregated appropriately and resulted in the contamination of a non-hazardous waste stream, such as soil and stones, resulting in a large volume of hazardous waste that would require specialist removal and treatment. Additionally, the contaminated soil and stones would no longer be fit for use for fill and landscaping and would need to be replaced with imported materials.

13.7 Residual Impacts

13.7.1 Construction Phase

13.7.1.1 Surface Water Drainage

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on surface water drainage will be neutral, imperceptible and short-term.

13.7.1.2 Wastewater Drainage

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on wastewater will be as neutral, imperceptible and short term.

13.7.1.3 Water Supply

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on water supply will be negative, imperceptible and short term.

13.7.1.4 Electricity

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on electrical supply will be negative to neutral, slight and temporary, depending on the length of temporary network suspensions.

13.7.1.5 Waste

The residual effects on waste management are considered slight, neutral, direct and short-term, this is due to:

- The prevention and mitigation measures proposed within this and other chapters of the EIAR;
- Compliance with national legislation and the allocation of adequate time and re-sources dedicated to efficient waste management practices; and
- Continued use of permitted/licensed waste hauliers and facilities. Waste removed from the facility will be managed appropriately and will avoid environmental effects or pollution. In addition, the correct management and storage of waste will avoid litter or pollution issues at the site.

13.7.2 Operational Phase

13.7.2.1 Surface Water

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on surface water drainage will be neutral, imperceptible and long-term.

13.7.2.2 Wastewater Drainage

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on wastewater will be neutral, imperceptible and long-term.

13.7.2.3 Water Supply

No mitigation measures are proposed in relation to water supply therefore the residual effects will have a neutral, imperceptible, long-term effect.

13.7.2.4 Electricity

No mitigation measures are proposed in relation to electrical supply therefore the residual effects will have a neutral, imperceptible, long-term effect.

13.7.2.5 Telecommunications

Having regard to the prevention and mitigation measures proposed within this and other chapters of the EIAR, the residual effects on telecommunications will remain as neutral, and imperceptible in the long-term.

13.7.2.6 Waste

Waste materials will be generated on an ongoing basis during the operational phase; these will for the most part consist of municipal waste and recyclable materials. Careful management of these, including segregation at source, will help to ensure a high level of waste recycling, reuse, and recovery at the development. Given the provision of appropriate facilities, and their correct use by residents, environmental effects (e.g. litter, contamination of soil or water, etc.) arising from operational waste storage and removal are expected to be minimal. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste. With the implementation of the proposed operational waste management measures, the Proposed Development is not expected to have a significant environmental effect with respect to operational waste. The likely effect of the operational phase on waste management will be neutral, direct and slight in the long-term.

13.8 Monitoring

13.8.1 Construction Phase

The site control measures to manage and minimise waste include:

- Signage on the site office/welfare bins to separate them as environmental/domestic waste bins; and
- Briefing for all sub-contractors via induction handouts.

During the construction phase, a procedure for waste auditing will be in place as per the RWMP which has been prepared for the planning application and is submitted under separate cover. The purpose of the waste auditing is to identify any problems with the site's waste procedures and also the benefits of prevention and minimisation that is in place. The audit will be a 'self-audit' process carried out by the Resource Manager (RM) and/or appointed team member/contractor. The RM will create an Audit Plan and identify the appropriate frequency at which the audits are to be conducted over the course of the construction phase. The waste audit will document details of the quantity, type and composition of all waste removed from the site. The audit findings will highlight any corrective actions that may need to be taken in relation to waste management procedures or site practices. These corrective actions will be tracked in order to identify root- causes as appropriate (DNV, 2025).

13.8.2 Operational Phase

The building management company and future residents will be required to maintain the bins and storage areas in good condition. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

13.9 Interactions

13.9.1 Population and Human Health

In the absence of mitigation, the improper removal, handling, and storage of waste could have adverse effects on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area, could adversely affect the surrounding human population and their overall health. Chapter 4: Population and Human Health of this EIAR has concluded that no long-term, significant adverse effects are likely to impact Population and Human Health as a result of the Proposed Development.

13.9.2 Land and Soil

Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the site. Potential effects on land and soil are addressed in Chapter 6 of this EIAR.

13.9.3 Hydrology and Hydrogeology

All connections to the public water network (water supply or foul sewer), abstractions from water supply and discharges to the foul sewer during the construction and operational phases will be under consent from Uisce Éireann. Potential effects on water and hydrology are addressed in Chapter 7 of this EIAR.

13.9.4 Climate

The Proposed Development has been designed in accordance with all relevant building design standards. Sustainable power and heat sources have been included as part of the building design to reduce reliance on imported fossil fuels and reduce greenhouse gases (GHG) emissions. Direct and indirect effects of the Proposed Development on climate (for example greenhouse gas emissions) and its vulnerability to climate change are assessed in Chapter 9.

13.9.5 Traffic

The Proposed Development will require the removal of excavated soil and transportation to appropriate waste facilities during the construction phase. It is anticipated that all excavated materials will require removal offsite in accordance with all statutory legislation.

It is estimated by the Main Contractor that the Construction Phase of the Proposed Development will involve the excavation of 184,422m3 of soil for the construction of building foundations, drainage and other infrastructure. It is anticipated that all surplus soil arising from groundworks will require off-site removal for reuse or recovery in accordance with appropriate statutory consents and approvals. (DNV, 2025)

This has the potential to negatively affect the surrounding road network. The removal of all soil from the site will be undertaken in accordance with all applicable statutory legislation and will be the responsibility of the main contractor. Potential effects on traffic are addressed in Chapter 13 of this EIAR.

It is expected that the majority of traffic generated by the Proposed Development will be generated during the operation phase through the general movement of residents of the development. (DNV, 2025)

13.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this chapter.

13.11 Conclusion

The assessment of likely effects resulting from the Proposed Development on built services and waste in this chapter has identified the existing infrastructure in the surrounding area in relation to surface water, wastewater, water supply, electrical supply, gas supply, telecommunications and waste. Where relevant, appropriate mitigation and monitoring measures have been detailed.

It is reasonably considered that following all mitigation measures including design embedded and prescribed, adequate implementation of the CEMP, RWMP and OWMP and adherence to construction best practice that no significant effects to built services and waste will arise from the Proposed Development during the construction or operational phases. Accordingly, the site is considered suitable for development as proposed.

13.12 References

Construction Environmental Management Plan, DNV, 2025.

Drainage and Water Infrastructure Engineering Report, Roger Mullarkey & Associates, 2025.

Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021.

Energy and Climate Action Statement, BBSC, 2025.

Environmental Protection Agency (EPA) (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

ENX (2025) Utility Report.

EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.

EPA (2019) By-Product Guidance Note: A guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011).

EPA (2021) Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects.

ESB Networks (2019) Construction Standards for MV Substation Buildings.

ESB Networks (2021) National Code of Practice for the Customer Interface Version 5.

European Union (Waste Directive) Regulations 2011-2021.

Health and Safety Authority (2010) Code of Practice for Avoiding Danger from Underground Services.

Irish Water Code of Practice for Water Infrastructure Connections and Developer Services Design and Construction Requirements for Self-Lay Developments July 2020 (Revision 2).

Litter Pollution Act 1997 as amended.

Local Government Ireland (2024) The National Waste Management Plan for a Circular Economy 2024-2030.

Operational Waste Management Plan, DNV, 2025.

Resource Waste Management Plan, DNV, 2025.

Site Specific Flood Risk Assessment, Kilgallen & Partners, 2025.

South Dublin County Council Waste Management Household and Commercial Waste Bye-laws 2018.

South Dublin County Development Plan, 2022-2028.

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) as amended by Directive (EU) 2018/851.

Waste Management Acts 1996 to 2011.

Water Services Acts 2007 to 2017.

14 MATERIAL ASSETS: TRAFFIC AND TRANSPORTATION

14.1 Introduction

This chapter of the Environmental Impact Assessment (EIA) Report presents the assessment of the likely significant effects (as per the "EIA Regulations") of the Proposed Development on Traffic and Transport arising from the construction and operation of the Proposed Development, both alone and cumulatively with other plans and projects.

This chapter provides a summary of topic-relevant guidance and outlines the data sources used to characterise the topic-specific Study Area. Building on the general EIAR methodology outlined in Chapter 1 (Introduction and Methodology), the topic-specific methodology followed in assessing the impacts of the Proposed Development on topic-specific environmental receptors is set out, as is the assessment of likely effects on the topic-specific environmental receptors on arising from the construction and operation of the Proposed Development. Relevant mitigation measures, following the 'mitigation hierarchy' of avoidance, minimisation, restoration and offsets, and/or monitoring requirements, are proposed in respect of any significant effects and a summary of residual impacts is provided, where relevant.

This chapter of the Environmental Impact Assessment Report (EIAR) assesses the likely significant effects on traffic and transport arising from the proposed Boherboy Large-Scale Residential Development (LRD) at Boherboy, Saggart, County Dublin. The assessment considers both the construction and operational phases of the project, with particular regard to vehicular traffic, public transport accessibility, pedestrian and cyclist movement, and road safety.

The methodology follows the principles set out in the IEMA Environmental Assessment for Road Traffic (2023) and the Environmental Protection Agency's (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022). These documents provide the framework for determining the significance of transport-related effects, defining thresholds for environmental change, and identifying appropriate mitigation and monitoring measures.

The study area for the assessment encompasses the local and strategic road network surrounding the site, including Boherboy Road (L2008) as the primary site access route, the connecting N81 corridor, and the adjacent Carrigmore and Corbally residential estates. The wider context also includes links to Fortunestown and Citywest, which provide access to higher-order road, cycle, and public transport networks, including the Luas Red Line and Dublin Bus services

14.1.1 Quality Assurance and Competency of Experts

This Chapter of the EIAR has been prepared by the following:

Ronan Kearns, BA, BAI, MSc, MBA, CEng MIEI

Chartered Engineer

Ronan is a Chartered Engineer with 20 years' post graduate experience. Projects worked on include roads, drainage and civil infrastructure design and project management for residential, retail, data centres, commercial and windfarm developments from feasibility through to construction.

Ronan has led numerous planning applications and infrastructure designs for a variety of developments. These developments have ranged from small scale residential projects to multimillion Euro retail, data centre and windfarm projects.

Ronan specialises in transportation planning and site assessment, preliminary design and detailed design of development. Ronan has completed a number of Traffic and Transport EIAR chapters on sites throughout Ireland.

14.2 Study Methodology

The assessment of potential traffic and transport impacts arising from the Proposed Development has been carried out in accordance with best-practice guidance, including the IEMA Environmental Assessment for Road Traffic (2023) and the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022). The IEMA guidance provides a structured approach to determining when changes in traffic flows may give rise to environmental effects, while the EPA guidelines establish the terminology and criteria for assessing their significance.

The IEMA methodology identifies two primary thresholds for considering whether road links or junctions should be assessed in detail:

- Rule 1 – where total traffic or Heavy Goods Vehicle (HGV) flows are predicted to increase by more than 30%, a perceptible environmental effect may occur; and

- Rule 2 – where traffic flows increase by more than 10% in particularly sensitive areas (such as residential streets, near schools, or areas with high pedestrian activity), a discernible environmental effect may arise.

Traffic increases below these thresholds are generally regarded as unlikely to give rise to measurable environmental effects. The assessment therefore focuses on identifying any road links where these IEMA thresholds could potentially be exceeded, with reference to local sensitivity and existing traffic conditions.

Traffic growth factors and baseline conditions have been established in accordance with Transport Infrastructure Ireland (TII) guidance, specifically PE-PAG-02039 – Project Appraisal Guidelines

for Traffic Forecasting (2022) and PE-PAG-02017 – Expansion Factors (2022). Traffic data for the study area were factored to a 2032 design year, representing the full operational scenario for the Boherboy LRD.

Potential impacts were assessed for both the construction and operational phases of the Proposed Development, considering the nature, magnitude, duration, and reversibility of effects. The assessment addresses impacts on all relevant receptors, including pedestrians, cyclists, public transport users, and general traffic. Where applicable, the effectiveness of embedded mitigation measures—such as the Construction Traffic Management Plan (CTMP) and Mobility Management Plan—has been considered in determining residual effects.

All effects have been classified using EPA (2022) significance terminology (imperceptible, slight, moderate, significant, or profound), with explicit reference to their duration (temporary, short-term, medium-term, or long-term) and nature (positive, neutral, or adverse).

14.2.1 Relevant Legislation and Guidelines

The following policies have been applied when developing the methodology for this assessment:

- Environmental Protection Agency (EPA) Guidelines on the Information to Be Contained in the EIAR (2022);
- IEMA Impact Assessment Guide to Delivering Quality Development (2016);
- Transport Infrastructure Ireland (TII) Traffic and Transportation Assessment Guidelines (2014);
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- 'Guidelines for Traffic Impact Assessments' The Institution of Highways and Transportation (1994);
- National Roads Unit 16.1 - Expansion Factors for Short Period Traffic Counts (PE-PAG-02039) (October 2016) - TII; and
- The Route to Sustainable Commuting NTA (2001).

This chapter of the EIAR has been drafted based on the following legislation, policies and published guidance:

- National Legislation:

  - National Planning Framework (NPF) 2019

- Regional Policy:

- South Dublin County Development Plan 2022-2028

  National guidance and industry standards:

  - IEMA Environmental Assessment for Road Traffic, 2023

  - Environmental Protection Agency (EPA) Guidelines on the Information to Be Contained in the EIAR (2022)

14.2.2 Guidance

IEMA Environmental Assessment for Road Traffic, 2023

IEMA methodology has been used for the appraisal of traffic impacts from the Proposed Development. It should be noted that the Republic of Ireland forms part of the IEMA Regional Network.

The purpose of the IEMA Guidelines is to provide the basis for a systematic, consistent, and comprehensive coverage for the appraisal of traffic impacts for a wide range of development projects.

The EIA process should be a continuous activity running throughout the planning and design stages of a project.

To ensure the comprehensive coverage of the environmental impacts arising from changes in traffic levels, the IEMA Guidelines identify a checklist of potential impacts such as driver severance and delay, pedestrian severance and delay, pedestrian amenity, accidents and safety, hazardous and dangerous roads, etc.

According to the IEMA Guidelines the assessment of the environmental impacts of traffic requires the following stages:

- Determination of existing and forecast traffic levels and characteristics;

- Determining the time period suitable for assessment;

- Determining the year of assessment; and
- Identifying the geographical boundaries of assessment.

Further to the above, the study area would be defined by identifying any link or location where it is considered that significant environmental effects may occur as a result of the proposed scheme.

The IEMA Guidelines state two rules to be considered when assessing the impact of development traffic on a highway link:

- Include highway links where traffic flows would increase by more than 30% (or the number of heavy goods vehicles (HGVs) would increase by more than 30%); and
- Include any other specifically sensitive areas where traffic flows would increase by 10% or more.

Less than a 30% increase is considered to result in imperceptible changes in the environmental effects of traffic. The IEMA Guidelines considered that projected changes in traffic flows of less than 10% create no discernible environmental effect.

Specifically, sensitive areas referred to above may include accident 'black spots', conservation areas, hospitals, or links with high pedestrian flows.

EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports, 2022

The Guidelines have the primary objective of improving the quality of EIARs. The guidance presents the terminology of effects which has been applied to this chapter, where appropriate.

14.2.3 Assessment Methodology

IEMA (Institute of Environmental Management and Assessment) Environmental Assessment for Road Traffic has been used for the appraisal of traffic impacts likely to arise from the construction, operation and decommissioning of the Proposed Development. The Environmental Assessment for Road Traffic offers a systematic approach to the assessment of the traffic impacts for developments on the local highway network.

The Environmental Assessment for Road Traffic provides a checklist for the assessment of environmental impacts arising from the changes in traffic levels during the mobilisation, construction, operational, maintenance and decommissioning phase of the project. These impacts include driver severance and delay, pedestrian severance and delay, pedestrian amenity, accidents and safety and hazardous and dangerous roads.

The sensitive receptors are pedestrians, cyclists and road users that use the local road network. The study area includes links and junctions which provided the most direct access routes to the application site and are, therefore, most likely to be affected by site traffic (construction, operational and decommissioning) traveling to/from the development site.

Any links that do not meet the defined selection criteria have not been considered as part of the study area and have been excluded from further analysis.

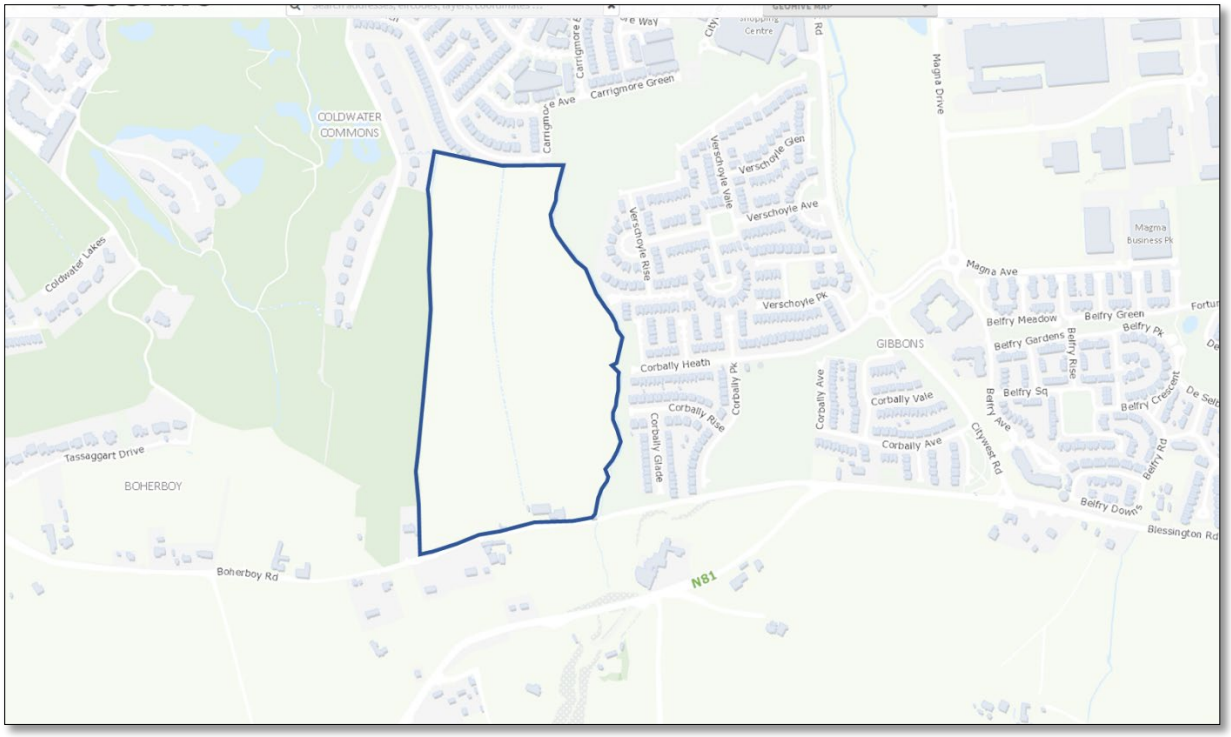

Figure Error! No text of specified style in document.**.1: Study Area**

Construction Phase

The IEMA Guidelines state that two rules need to be considered when assessing the impact of development traffic on a highway link:

- Include highway links where traffic flows would increase by more than 30% (or the number of heavy goods vehicles (HGVs) would increase by more than 30%); and
- Include any other specifically sensitive areas where traffic flows would increase by 10% or more.

Less than a 30% increase is considered to result in imperceptible changes in the environmental effects of traffic. The IEMA Guidelines consider that projected changes in traffic flows of less than 10% create no discernible environmental effect.

Specifically, sensitive areas referred to above may include accident 'black spots', conservation areas, hospitals or links with high pedestrian flows.

The Construction Phase assessment has been limited to roads immediately adjacent to the application site and any roads further afield where traffic would increase by greater than 30% or 10% at nodes such as accident 'black spots', conservation areas, hospitals or links with high pedestrian flows.

Operational Phase

The Proposed Development is anticipated to be completed and fully operational in 2027. The assessment considers the full quantum of development at this future year.

Estimated trip generation for the Proposed Development was provided for the assessment. Trips were distributed onto the local highway network based upon the directional splits from the 2024 traffic survey data that were commissioned in support of the Proposed Development.

Based on the construction of projects having similar scale and complexity, it is expected that the construction works would take up to 24 months (2 years) to construct

14.2.4 Assessment Criteria

The EPA and IEMA Guidelines were reviewed to identify appropriate significance criteria applicable to the assessment.

Paragraph 3.12 of the IEMA Guidelines states the following: "*A critical feature of an environmental assessment is determining whether a given effect is significant.*

Having quantified the magnitude of the impact (i.e. the level of change), there are various ways of interpreting whether or not the resulting outcome is considered significant. There is no definition of a 'significant effect' in the EIA Regulations.

Furthermore, for many effects, there are no simple rules or formulae that define appropriate assessment thresholds and therefore there is a need for interpretation and judgement on the part of the competent traffic and movement expert, backed up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing an impact and the sensitivity of those people, as well as the assessment of the damage to various natural or cultural resources.

The competent traffic and movement expert will need to make it clear how they have defined whether a change (and the resultant effect) is considered significant or no".

Under EPA guidelines quality effects are described as either:

- Positive – a change which improves the quality of the environment (such as reduction of traffic, travel time or patronage, or provision of a new service, access or facility);
- Neutral – no effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error; and
- Adverse – a change which reduces the quality of the environment (such as increase of traffic, travel time, patronage or loss of service or facility).

The significance of pedestrian severance, delay, amenity, fear and intimidation effects has been determined by considering future baseline traffic flows obtained from the traffic surveys, as well as the potential impact of the Proposed Development in terms of change in traffic flows on each link within the study area by reference to the IEMA Guidelines and applying professional judgment.

Pedestrian Severance

The IEMA Guidelines acknowledge that the measurement and prediction of severance is extremely difficult and that the correlation between the extent of severance and the physical barrier of a road is not clear.

It notes that there are no predictive formulae which give simple relationships between traffic factors and levels of severance. However, the IEMA Guidelines do accept that in general, marginal changes in traffic flows are, by themselves, unlikely to create or remove severance.

Factors which need to be considered when determining severance comprise road width, traffic flows, speed of traffic, the presence of pedestrian crossing facilities and the number of pedestrian movements across the affected route.

The IEMA Guidelines suggest that:

- Changes in flow of up to 30% would produce slight changes in severance;
- Changes in flow of up to 60% would produce moderate changes in severance; and
- Changes in flow of up to 90% would produce substantial changes in severance.

It is recognised that these are guidelines only and are highly dependent on existing ambient traffic levels.

They are not considered to be definitive measures of severance and should be used with care and regard paid to specific local conditions. The guidelines have been used to inform impact magnitude criteria for the assessment. Professional judgment has been applied to identify the likely scale of effects.

Pedestrian Delay

The IEMA Guidelines note that changes in the volume, composition and/or speed of traffic may affect the ability of people to cross roads. Typically, increases in traffic levels result in increased pedestrian delay, although increased pedestrian activity itself also contributes. The IEMA Guidelines do not set any thresholds for absolute or actual changes in delay, recommending instead that assessors use their judgment to determine the significance of the impact.

The IEMA Guidelines refer to a report published by the Transport Research Laboratory (TRL) Supplementary Report 356 as providing a useful approximation for determining pedestrian delay. The TRL research concludes that the mean pedestrian delay was found to be eight seconds at flows of 1,000 vehicles per hour, and below 20 seconds at 2,000 vehicles per hour for various types of crossing condition.

A two-way flow of 1,400 vehicles per hour has been adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities) in the TRL report.

Below this flow, pedestrian delay is unlikely to be a significant factor. This is deemed to be a robust starting point for narrowing down the modelled routes within the study area and ensuring the routes selected exceeded the suggested threshold of analysis in IEMA Guidelines. It should be noted that for controlled forms of pedestrian crossing the pedestrian delays are less.

As a result, any road with a two-way flow of less than 1,400 vehicles per hour is deemed to have a negligible effect. Roads above this are assessed on the basis of professional judgment.

Pedestrian Amenity

IEMA Guidelines define pedestrian amenity as the relative pleasantness of a journey and may be influenced by fear and intimidation if they are relevant. As with pedestrian delay, pedestrian amenity is considered to be affected by traffic volumes and composition along with pavement width and pedestrian activity. The IEMA Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flows are halved or doubled.

The Guidelines have been used to inform impact magnitude criteria for the assessment. Professional judgment has been applied to identify the likely scale of effects.

Pedestrian Fear and Intimidation

A number of factors are considered relevant in determining changes in the level of fear and intimidation experienced by pedestrians and cyclists including volume of traffic; percentage of HGVs; speed of traffic; proximity to people; and the availability and quality of pedestrian infrastructure.

*Table **Error! No text of specified style in document.**-1 Pedestrian Fear and Intimidation Criteria*

Pedestrian Fear and Intimidation Criteria			
Average Traffic Flow over 18hr day (vehicles per hour) **(a)**	**Total 18-hr HGV Flow** **(b)**	**Average Speed (mph)** **(c)**	**Degree of Hazard Score**
1,800+	3,000+	->40	30
1,200–1,800	2,000–3,000	30-40	20
600–1,200	1,000–2,000	20-30	10
<600	<1000	<20	0

The IEMA Guidelines set out the criteria reproduced in **Table 14.2** for measuring the effects of fear and intimidation.

*Table **Error! No text of specified style in document.**-2 Levels of fear and intimidation*

Levels of fear and intimidation	
Level of fear and intimidation	**Total hazard score (a) + (b) + (c)**
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation level.

*Table **Error! No text of specified style in document.**-3 Fear and intimidation magnitude of impact*

Fear and intimidation magnitude of impact	
Magnitude of impact	**Change in step/traffic flows (24-HR) from baseline condition**
High	Two step changes in level
Medium	One step change in level, with >400 veh increase in average 18hr AV two-way flow and/or >500 HV increase in total 18HR HV flow
Low	One step change in level, with <400 veh increase in average 18hr

	AV two-way flow and/or <500 HV increase in total 18HR HV flow
Negligible	No change in step change

The IEMA Guidelines stress the need for professional judgment when applying the above criteria. Accordingly, the guidelines have been used to inform impact magnitude criteria for the assessment. Professional judgment has been applied to identify the likely scale of effects.

Driver Delay

IEMA Guidelines note that driver delay can occur at several points on the network, although the effects are only likely to be significant when the traffic on the highway network is predicted to be at or close to the capacity of the system. Professional judgment has been applied to determine the significance of residual effects.

Accidents and Safety

There is no formal published guidance for the assessment of accidents and safety. Therefore, professional judgment has been applied to assess the implications of local circumstances and the Proposed Development 's likely effect which may increase or decrease the risk of accidents.

Hazardous Load

This development does not involve the transportation of dangerous or hazardous loads by road and therefore is not included in this assessment.

14.2.5 Receptor Sensitivity/Value Criteria

Highway Network

The potential receptors are the users of transport networks within the relevant study area. The sensitivity of a road can be defined by the vulnerability of the user groups who are likely to use it, i.e., the elderly or children.

A sensitive area may be where pedestrian activity is high, near a school, or an accident black spot.

It also takes into account the existing nature of the road, i.e., an existing residential area is likely to be more sensitive than a road capable of carrying larger volumes of traffic such as an R-Road (regional roads), N-Road (national roads) or M-Road (motorways).

Professional judgement has been used to define the value of receptors in accordance with LA 1047 Section 3.1. [1]

The sensitivity of receptors has been classified as low, medium or high, in accordance with the criteria set out in **Table 14.4**.

*Table **Error! No text of specified style in document.**-4 Receptor Sensitivity*

Receptor Sensitivity	
Sensitivity	**Criteria**
High	Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident clusters, retirement homes, roads without footways that are used by pedestrians.
Medium	Receptors of moderate sensitivity to traffic flow: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, recreation facilities.
Low	Receptors with some sensitivity to traffic flow: places of worship, public open space, tourist attractions and residential areas with adequate footway provision.
Very Low	Receptors with very low sensitivity to traffic flows and those

[1] 7 LA 104 Environmental assessment and monitoring, Rev 01, DMRB, July 201

	sufficiently distant from affected roads and junctions.

Impact Magnitude Criteria

The magnitude of impact has been classified as low, medium or high, in accordance with the criteria set out in **Table 14-5**.

*Table **Error! No text of specified style in document.**-5 Scale of Impact Criteria*

Scale of Impact Criteria				
Impact	**Assessment Criteria**			
	Low	**Medium**	**High**	**Very High**
Severance	Increase in total traffic flows of 30% or under	Increase in total traffic flows of 30% – 60%	Increase in total traffic flows of 60%-90%	Increase in total traffic flows of 90% and above
Pedestrian, cyclist and equestrian delay.	Two-way traffic flow < 1,400 vehicles per hour.	A judgement based on the road links with two-way traffic flow exceeding 1,400 vehicles per hour in context of the individual characteristics.		
Pedestrian, cyclist and equestrian amenity.	Change in total traffic or HGV flows < 100%	A judgement based on the routes with >100% change in context of their individual characteristics		
Fear and intimidation.	18hr average of <600 veh/hr and <10mph, <1,000 HGVs in 18 Hr	18hr average of 600-1200 veh/hr and 10-15mph, 1,000-	18hr average of 1200-1800 veh/hr and 15-20mph,	18hr average of >1800veh/hr and >20mph,

		2000 HGVs in 18 Hr	2,000-3000 HGVs in 18 Hr	>3000 HGVs in 18 Hr
Driver and passenger delay	This has been assessed on a case-by-case basis using professional judgement subject to the sensitivity and vulnerability of the receptor. Impacts are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.			

Scale of Effect Criteria

Impacts have been assessed based on the value/sensitivity of receptors against the magnitude of impact to determine the scale of effect as presented in **Table 14.6**. The matrix has been informed by the EPA Guidelines.

*Table **Error! No text of specified style in document.**-6 Significance Criteria*

Significance Criteria				
Magnitude	**Sensitivity of Receptors**			
	Very Low	**Low**	**Medium**	**High**
Low	Imperceptible	Not Significant	Slight	Slight
Medium	Not Significant	Slight	Slight	Moderate-Significant
High	Slight	Slight	Moderate-Significant	Very Significant
Very High	Slight	Moderate-Significant	Very Significant	Profound

The criteria used to assess whether an effect is significant or not, are given in the EPA Guidelines 2022 and are set out in **Table 2.1** in **Chapter 2: EIA Process and Methodology**. The significance of effects is determined by consideration of the sensitivity of the receptor, the magnitude of impact and scale of the effect. In assessing the significance of an effect, consideration has been given to the quality, duration, probability and type of the effect, and its geographical extent, and the application of professional judgement.

Based on professional judgement, moderate-significant, very significant and profound effects are considered significant in EIA terms.

Where the existing baseline HGV or total traffic flows are very minor, a small increase in vehicles would produce a large change in magnitude whereas in real terms the increase in traffic may still be considered to be negligible or slight. In these instances, appropriate professional and experienced judgements have been made.

Nature of Effect Criteria

The nature of the effect has been described as either adverse , neutral or positive as follows:

- Positive – An advantageous effect to a receptor;
- Neutral – An effect that on balance, is neither positive nor adverse to a receptor; or
- Adverse – A detrimental effect to a receptor.

14.2.6 Topic-specific Consultation

A Section 247 meeting was held with South Dublin County Council on the 2nd of May 2023 which was attended by representatives of South Dublin County Council's Transportation Department and Parks Department. At this meeting, it was agreed that the original count locations would be re-surveyed for the revised planning application that this EIAR will accompany.

In preparation for the Stage 2 Application as part of the LRD process, a site meeting was held with representatives of the Parks Department and Roads Department of South Dublin County Council on Boherboy Road on the 24th of October 2023. This was in the context of the following:

- Determining if the Boherboy Road upgrade could be built without affecting the existing hedges/trees and
- Whether or not the Boherboy Road upgrade was still required given that connections to Corbally, Carrigmore and Boherboy Road could be delivered Day 1 of this application by the Applicants.

The original requirement for the Boherboy Road upgrade came from the first phase requirement of the Fortunestown LAP. Given that this is no longer applicable and given the taking in charge of Corbally and Carrigmore has been completed, the clear desire line for pedestrians and cyclists towards Citywest can be achieved without the need for a footpath along Boherboy Road. In this scenario, all hedge/trees are retained whilst also providing high-level pedestrian/cyclist permeability along the relevant desire lines.

At that meeting it was agreed that the Applicants would investigate the impact that the proposed Boherboy Road upgrade would have on the trees/hedges on Boherboy Road. Should this impact be deemed to be significant, the Applicants were to examine the possibility of connecting the southeast corner of the site to Corbally. This was the be facilitated through the new 'rectangle site' which was not part of the original SHD application.

Following the informal site meeting, and as part of the LRD process, a Stage 2 Meeting was held with South Dublin County Council on the 14th of August 2024. South Dublin County Council issued an Opinion Report relating to a Large-Scale Residential Development (LRD) meeting with the following issued raised:

- Sustainable Movement (Roads) - Further consideration shall be given to the design recommendations set out in Appendix 10. Particular attention should be given to reducing the level of car parking, ensuring all road of similar type are the same width across sit.

- Environmental Considerations – An EIAR and an AA Screening Assessment shall be submitted with the final application

Appendix 10 include the following suggestions:

1. The proposed development is in a study area for a future national road scheme. The Authority recommends that the planning authority consult with the local Road Design Office (RDO) in considering this application.

2. The applicant is requested to submit a layout of appropriate scale showing the areas to be taking in charge.

3. The applicant is requested to provide an analysis of the impact of the development upon the existing traffic network.

4. A stage 1 road safety audit is required.

5. The amount of parking is at the maximum the applicant is requested to reduce the overall parking provision.

6. The western shared cycle tracks should be designed with reference to the cycle design manual and in consultation with South Dublin's Active travel section.

7. The applicant is requested to provide a layout of the southern boundary showing pedestrian links, and any possible future links east and west.

8. Details of the connection of the access roads to the existing should be provided.

9. Statement of Compliance with DMURS.

10. The applicant is requested to clearly show the provision of dedicated cycle infrastructure along the central roadway north-south and to provide connections east to west through the central green space.

11. A layout detailing the road hierarchy that is consistent with DMURS.

12. A layout showing the cycle routes across the development, ensuring connectivity across the site and that takes account of the change in elevation.

These items will be included in the final planning application, and where relevant, include in this chapter of the EIAR.

14.2.7 Data Sources

There are two primary data sources:

Traffic survey undertaken by the Applicant on the 10th April 2025.

Additional data was sourced from the National Transport Authority in the form of public transport information.

14.2.8 Approach to Assessment of Effects

The baseline information obtained has been used to provide an understanding of the value of each receptor relevant to this topic (the 'baseline scenario'), and its sensitivity to the potential impacts associated with the construction and operation of the Proposed Development.

The baseline scenario has been determined with due consideration of the 'do nothing' scenario.

The 'source-pathway-receptor' model has been used to identify potential impacts resulting from the Proposed Development activities on the environment and sensitive receptors within it.

The potential environmental impacts identified have been assessed using a systematic approach to identify and evaluate the significance of the potential impacts both alone and in combination with other plans and projects.

Effects can be beneficial (positive), neutral or adverse (negative) in nature.

Significance of effects has been categorised as follows:

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

Effects determined as slight or lower are considered to have ‘no likely significant effect’. Any effect with a greater than moderate significance is considered to have a 'likely significant effect'.

The assessment described above includes consideration of mitigation measures that are incorporated into the design (i.e., primary mitigation) and which are intended to prevent, reduce and where possible offset any significant adverse impacts on the environment.

Where potentially significant adverse effects have not been eliminated by project design or embedded mitigation, further mitigation measures (i.e., secondary mitigation) have been proposed.

For each significant effect identified, appropriate secondary mitigation measures are prescribed. Secondary mitigation measures have been informed by stakeholder engagement and determined by the relevant technical experts.

Where relevant, residual effects have been determined for each significant effect, considering all proposed mitigation.

In cases where residual uncertainty of impact is identified within the EIAR, or the success of implemented mitigation measures requires validation, commitments have been made for the provision of monitoring.

14.2.9 Limitations of Assessment

The impact of the development has been limited to the nodes located in Figure 14.14. Classified counts were carried out on the 10th April 2025. The traffic data is valid on that only and is influenced by network conditions on the day. It is assumed the data is representative based on previous traffic counts that were undertaken in May 2023.

14.3 The Existing and Receiving Environment (Baseline Situation)

The proposed development site is located at Boherboy, Saggart, County Dublin, within the administrative area of South Dublin County Council (SDCC). The site lies to the south of the existing Carrigmore residential estate and north of Boherboy Road (L2008), which forms the principal access route to the site. The wider area is characterised by a mix of residential and educational uses, with connections to Corbally to the east and open agricultural lands to the west. The site is approximately 1.2 kilometres west of the Fortunestown Luas stop and the Citywest employment and retail centre, which together form the main public transport and employment hubs in the local area.

14.3.1 Receiving environment

This section considers the baseline conditions, providing background information for the site in order to determine the significance of any traffic implications. This section also considers the existing accessibility of the site by sustainable modes of transport.

14.3.2 Site location

The application site is located approximately c. 13.7 Km southwest of Dublin City Centre and is bounded to the north by Carrigmore Estate; Corbally Estate to the east; agricultural land to the west and Boherboy Road to the south.

14.3.3 Local road network

The road network surrounding the site provides a variety of movement functions. Boherboy Road links Tallaght in the east with Saggart in the West. The N82 provides access to Dublin via the M7/N7 and to other inter urban motor ways via the M50.

Boherboy Road, Corbally Estate and Carrickmore Estate will be the primary access points into the proposed development.

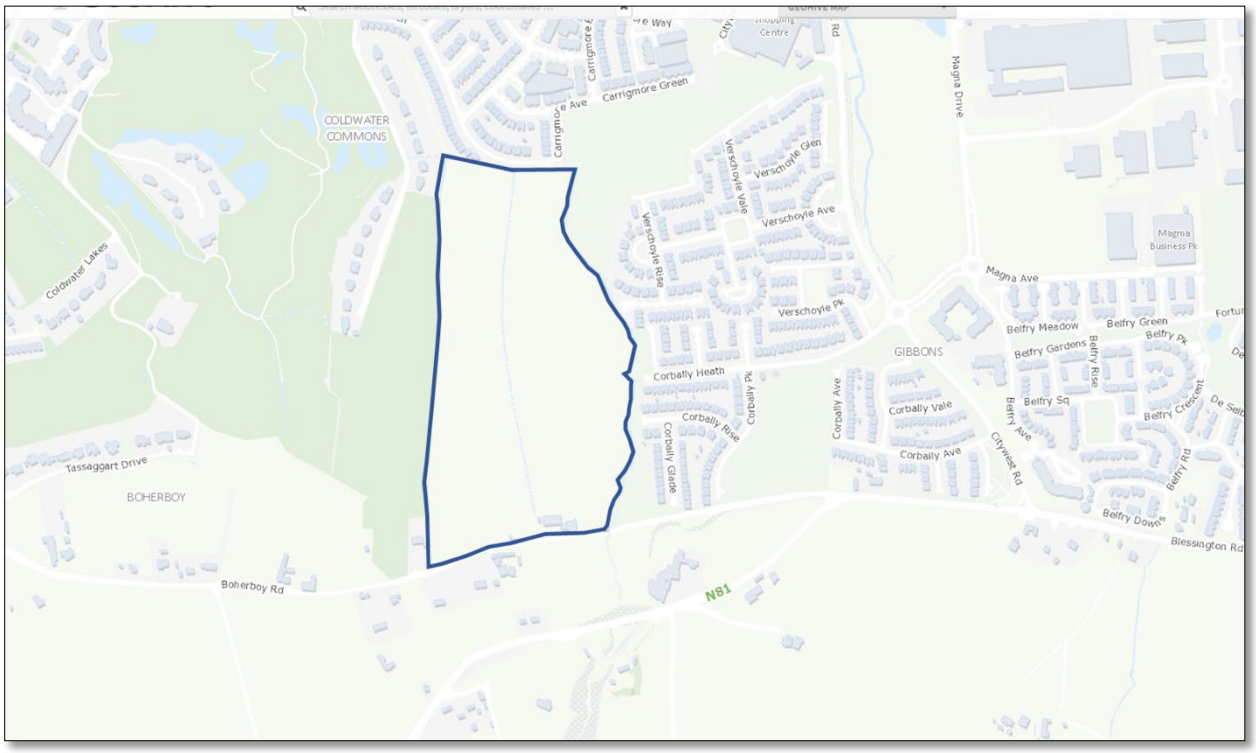

Figure Error! No text of specified style in document.**.2 Local Highway Network**

These routes provide for pedestrians, cyclists and motorists alike and a general commentary on these facilities is presented below:

Boherboy Road

Boherboy Road is a local country road forming a priority-controlled junction with the N81 to the east and a signal-controlled junction with Church Street/Castle Street to the west.

The carriageway width is approximately c6.0m along the site frontage with no footpaths along the site frontage

Boherboy Road has a country road character providing access to Saggart from the N81. A speed limit of 60km/h was noted on Boherboy Road along the site frontage.

No cycle facilities are provided along Boherboy Road.

Figure Error! No text of specified style in document..**3 Boherboy Road (Looking west)**

Figure Error! No text of specified style in document..**4 Boherboy Road (Looking east)**

N81

The N81 road is a national secondary road starting at the M50 motorway and ending in Tullow, County Carlow.

The carriageway width is approximately 11.0m at the junction with the Boherboy Road. As the N81 leaves Tallaght the speed limit increases to 80km/h.

There is limited pedestrian infrastructure adjacent to the junction with the Boherboy Road. No

Figure Error! No text of specified style in document.**.5 The N81 at the junction with Boherboy Road**

Corbally

The proposed development will connect to Corbally Heath on its eastern boundary.

Corbally Heath is forms part of the Corbally Estate and provides access to the Citywest Road to the east.

The carriageway width is approximately c 7.2m with grass verges and footpaths.

The Corbally Estate has a slow zone in operation with a 30km/h speed limit in operation.

No cycle facilities are provided along Corbally Heath.

Figure Error! No text of specified style in document.**.6 Corbally Heath looking towards proposed development**

Carrickmore

The proposed development will connect to Carrickmore Green on its northern boundary.

Carrickmore Green is forms part of the Carrickmore Estate and provides access to the Fortunestown Lane to the north

The carriageway width is approximately c 7.2m with grass verges and footpaths.

The Carrickmore Estate has a slow zone in operation with a 30km/h speed limit in operation.

No cycle facilities are provided along Carrickmore Green.

Figure Error! No text of specified style in document.**.7 Carrigmore Avenue looking towards proposed development**

14.3.4 Permeability

Permeability for residents and visitors to the proposed development is a key factor in determining the long-term sustainability when considering modal choice.

To encourage a shift away from car dependency, residents and visitors to the development must have viable alternative choices such as walking routes and cycle routes public transport links.

Walking

Figure 14.8 outlines the walking distance covered by the average person in a 15-minute period. It illustrates the local amenities that are available to the proposed development. Local amenities within 15-minutes' walk of the proposed development include:

- Citywest Shopping Centre
- Fotutnestown Luas Stop
- Access to bus network

- School
- Carrigmore District Park

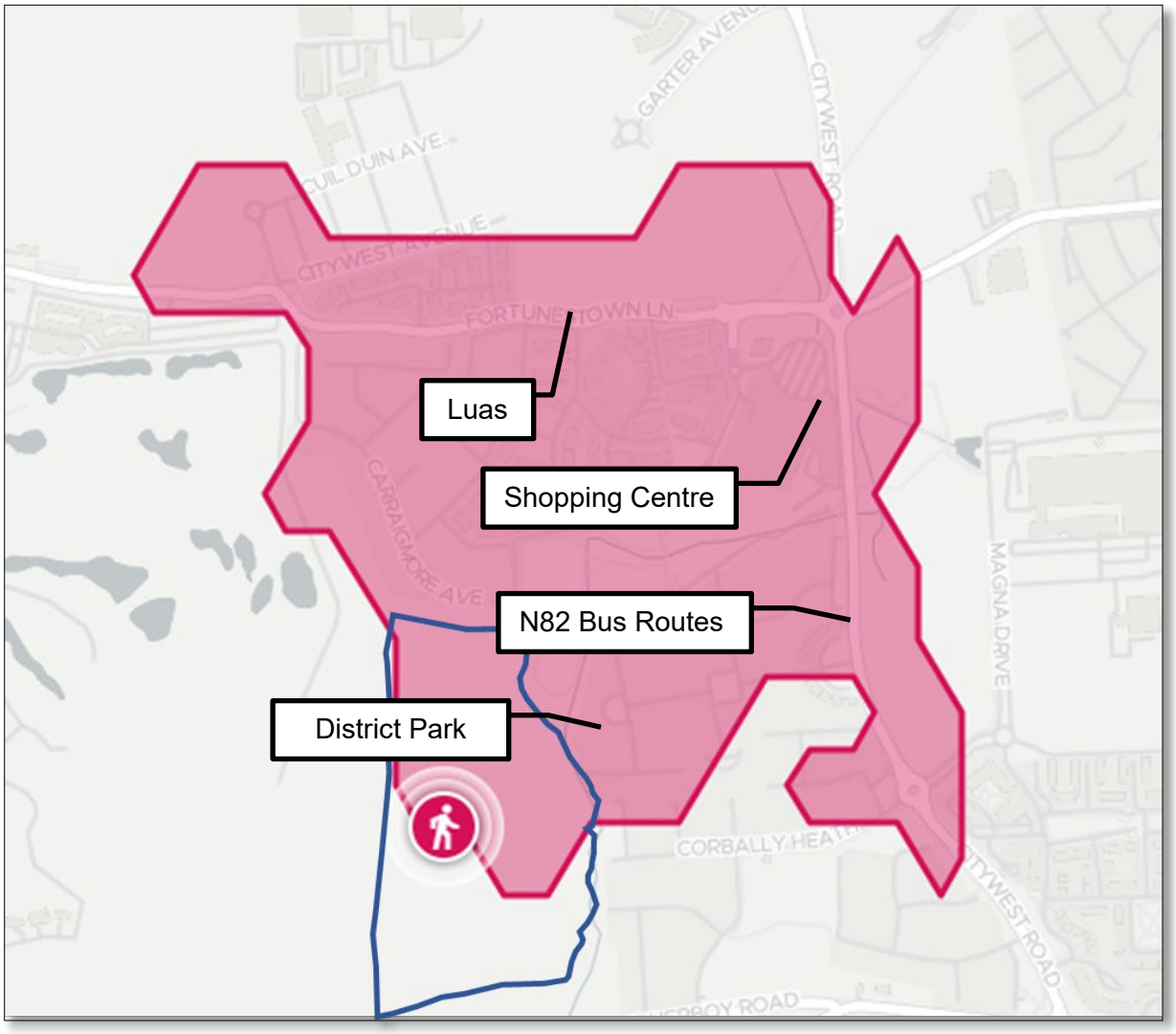

Figure Error! No text of specified style in document..**8 Walking Distance (15 Min Travel Time)**

Cycling

Figure 14.9 outlines the cycling distance covered by the average person in a 30-minute period. These routes are a combination of cycle lanes and shared routes.

Figure 14.9 illustrates the local amenities that are available to the proposed development. Local amenities within 30-minutes cycle of the proposed development include:

- Citywest Shopping Centre
- Fotutnestown Luas Stop
- Access to bus network
- School
- Carrigmore District Park
- Access to areas of employment (Citywest Business Campus, Tallaght Village)
- Allows access to/from surrounding areas including:
  - Tallaght
  - Clondalkin
  - Firhouse
  - Rathchoole
  - Newcastle

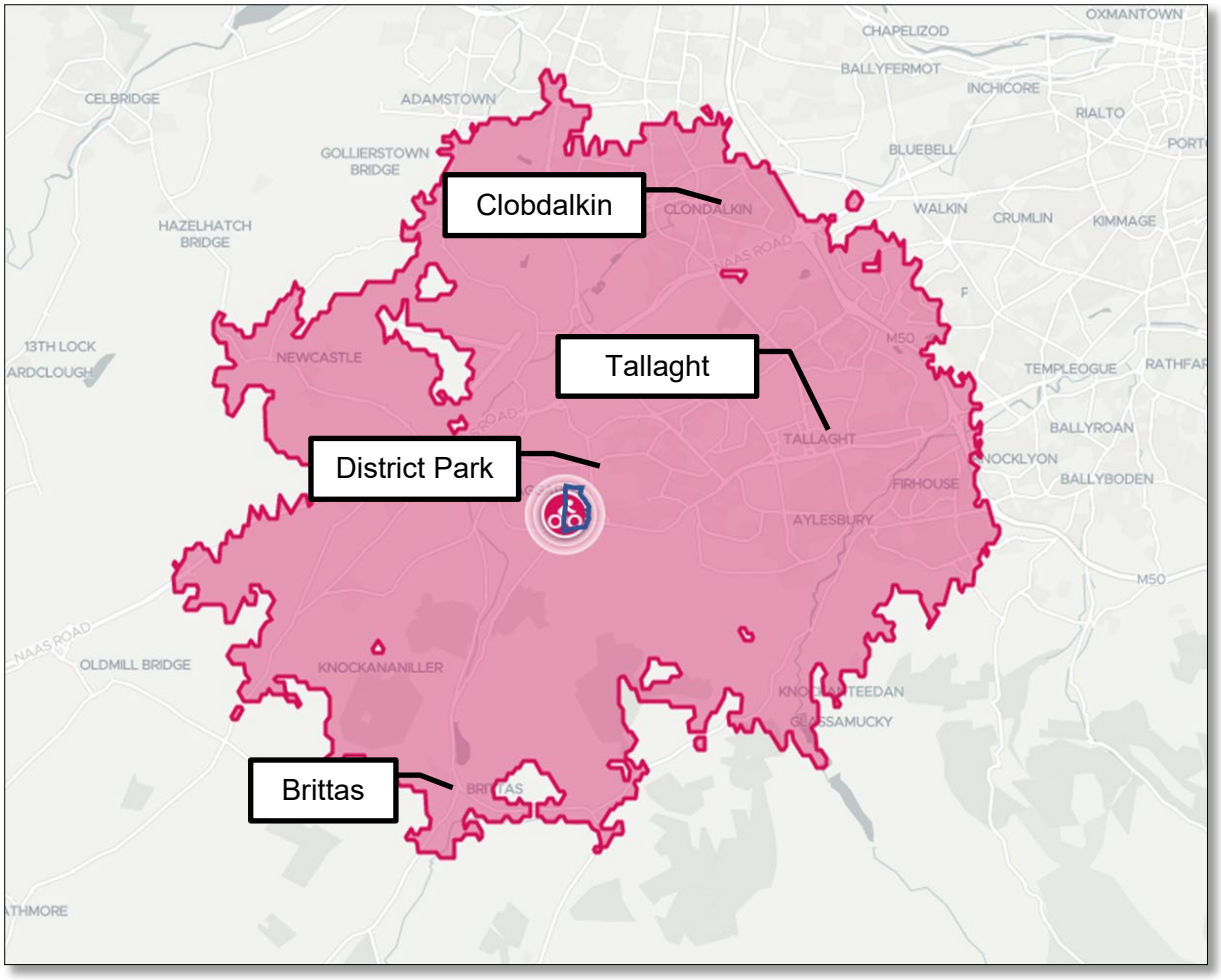

Figure Error! No text of specified style in document..**9 Cycle Distance (30 Min Travel Time)**

Public Transport

Figure 14.10 outlines the distance that maybe covered on a 90minute public transport journey.

A 90-minute public transport journey allows access to areas of employment such as:

- Citywest Business Campus
- Tallaght
- Dublin City Centre
- IFCS

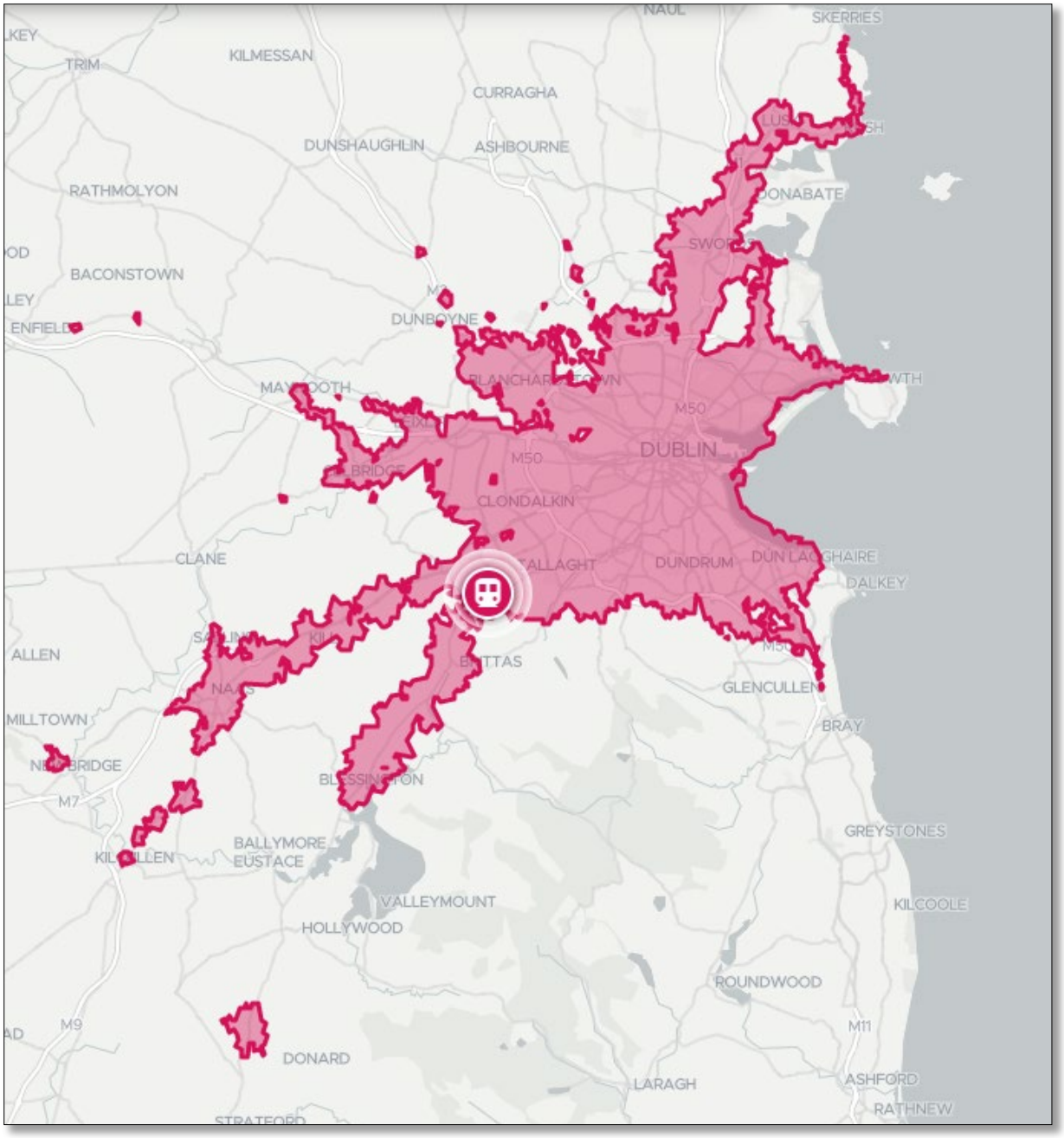

Figure Error! No text of specified style in document.**.10 Public Transport (90min Travel Time***)*

A 90-minute public transport journey allows access from areas such as:

- Lusk (North County Dublin)
- Donard (North Wicklow)

- Dun Laoghaire (West Dublin)

- Maynooth (North Kildare)

This permeability opens up the site to all Third Level Institutions located within Dublin and Kildare (NUIM). It also offers permeability the major amenities located within Dublin City Centre (shopping, entertainment) and the gateway towns into Dublin where the likes of major retail parks are located.

The proposed site is located within 90-minute public transport link to all major Dublin sporting and event venues.

Driving

The site has strong permeability to local amenities via walking, cycling and public transport. This will help reduce, but not eliminate, car trips.

Where car-based trips are required, the proposed development has good access to the M50, M7/N7 and the N81.

For car heading north and east via the M50, the direct route is via Carrigmore and the N7. For car heading south and east via the M50, the direct route is via the N81. For car heading west via the M7, the direct route is via Carrigmore and the N7.

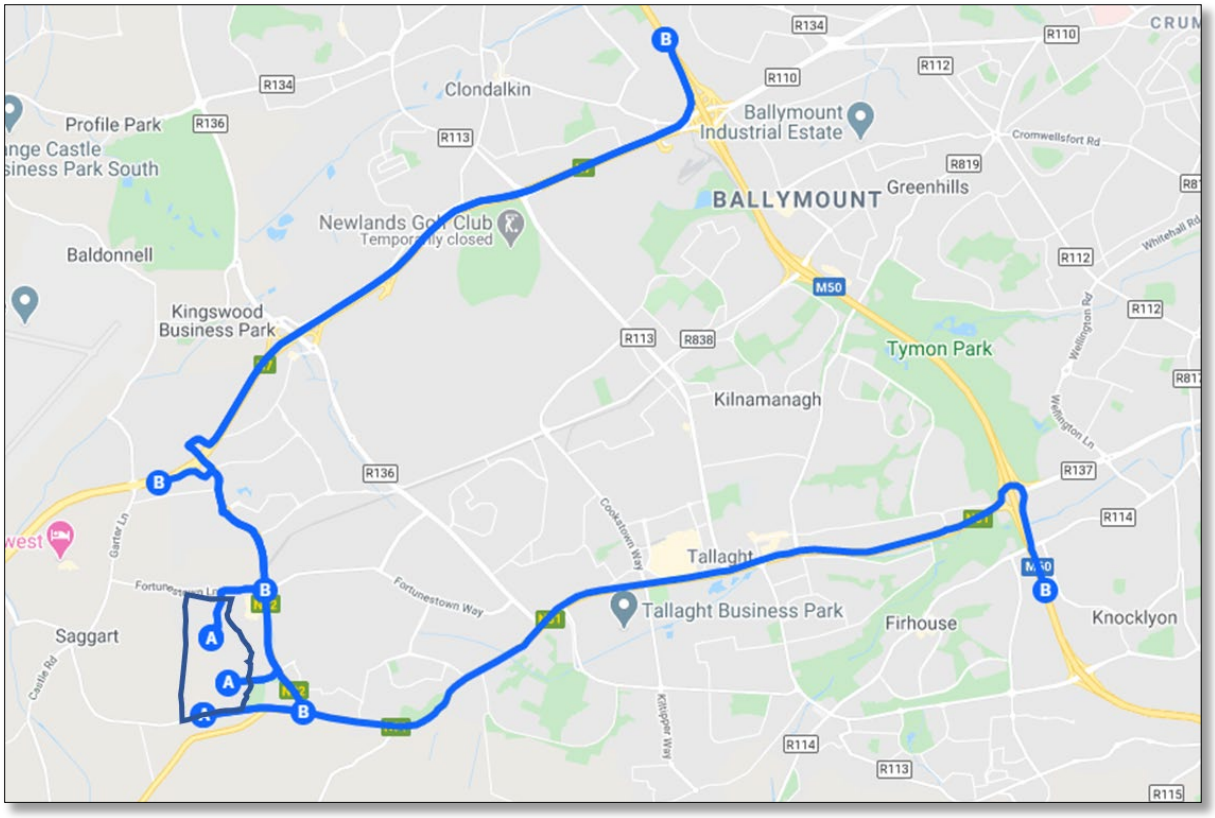

Figure Error! No text of specified style in document..**11 Road Accessibility**

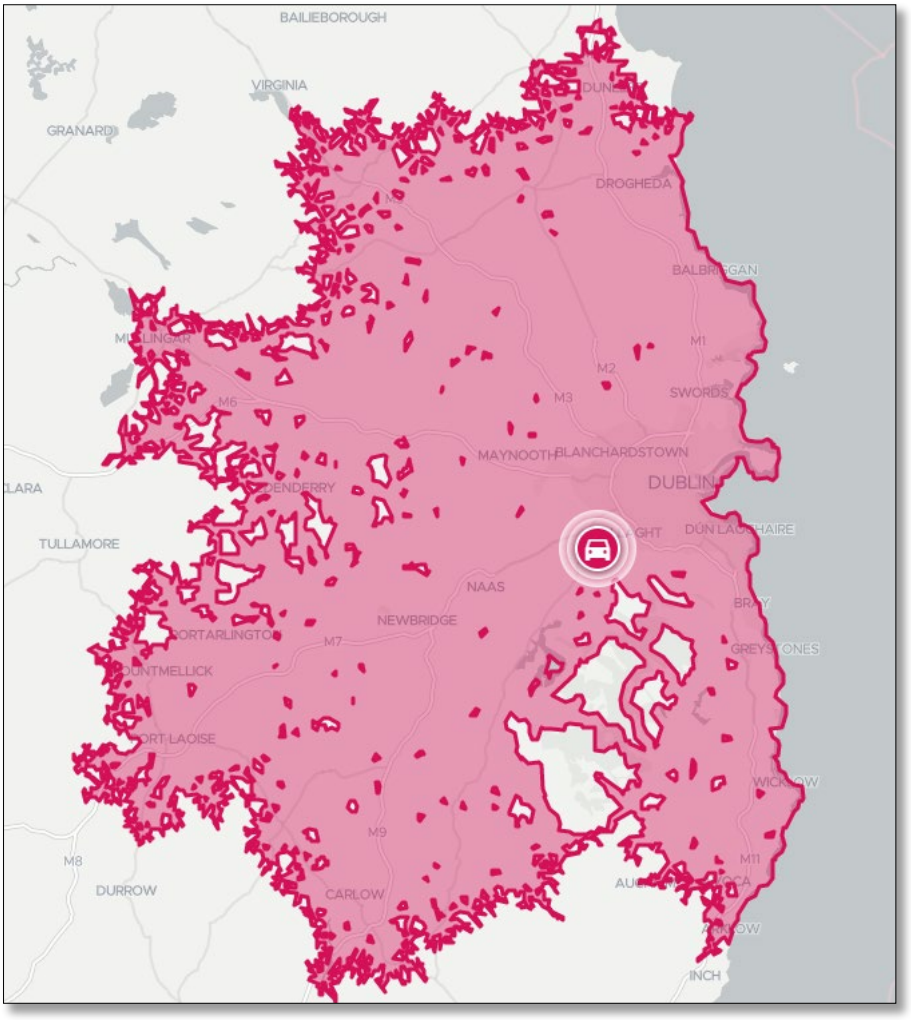

Figure Error! No text of specified style in document.**.12 Road Travel Distance (60 min Travel Time)**

Figure 14.12 outlines the travel distance by car for a 60 min travel time.

14.3.5 Accident Data

A review of the Road Safety Authority (RSA) traffic collision database has been undertaken for the road network in the vicinity of the proposed site to identify any collision trends. This review will assist to identify and potential safety concerns in relation the existing road network.

Traffic collision data was obtained for the period 2005-2016 which is the most recent data available from the RSA website. These incidents are categorised into class of severity, which includes minor, serious or fatal collisions. The analysis is shown in **Figure 14.13**.

The analysis has 3 No, minor incidents along Boherboy Road adjacent to the proposed development frontage. These incidents were classed as 2 No. single vehicle collisions and 1 No. head on collision.

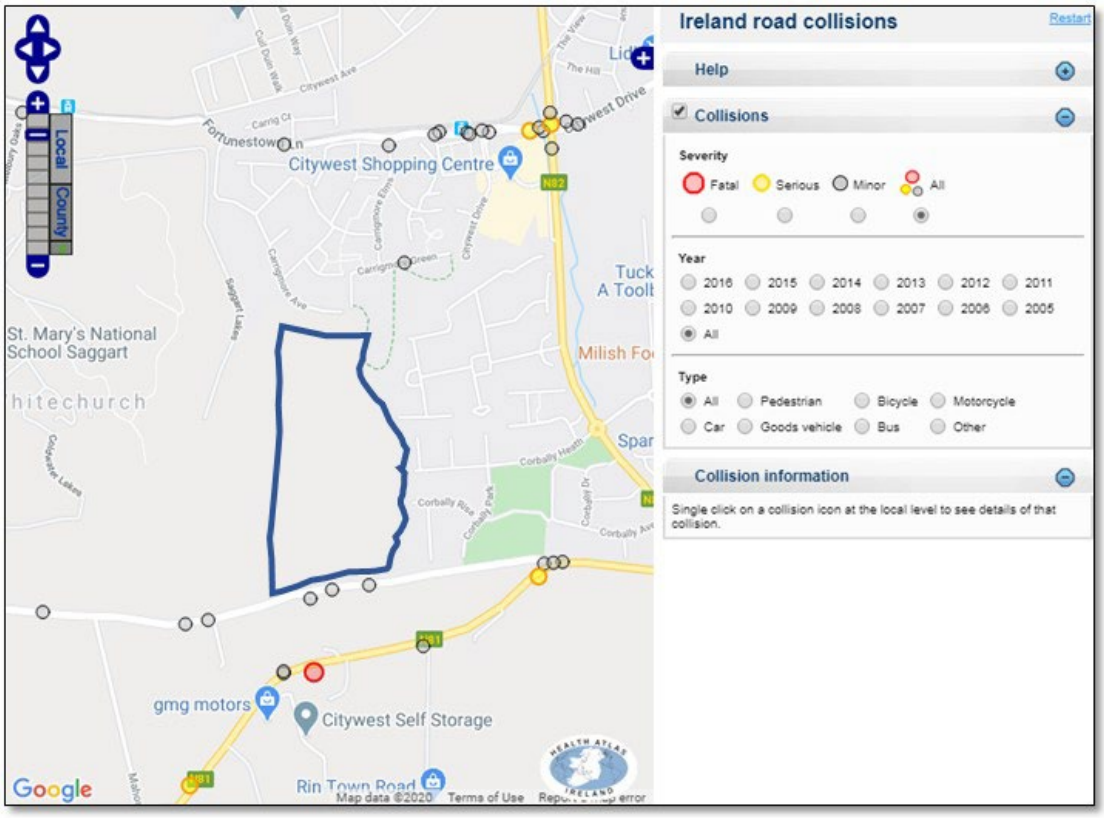

Figure Error! No text of specified style in document.**.13 Road Collisions (Source: RSA)**

Note, the RSA has stopped publishing crash data for GDPR reasons. The data above was sourced in 2020.

14.3.6 Spatial Scope

In accordance with the IEMA Guidelines, the study area has been defined by identifying any link or location where it is considered that significant environmental effects could occur as a result of the Proposed Development.

The local highway network study area has been informed by the following two rules, as set out in IEMA Guidelines :

- **Rule 1** – Screening Based on Traffic Change: Include all routes where traffic flows are expected to increase by more than 30% (or where the number of heavy goods vehicles (HGVs) increases by more than 30%).

- Below this level of change, it is unlikely that environmental effects of traffic will be perceptible or significant.

- Rule 2 – Sensitive Locations: Include any routes where traffic flows are expected to increase by 10% or more (or HGVs by 10% or more) if the route passes through a particularly sensitive area — such as near schools, hospitals, residential streets, conservation areas, or locations with high pedestrian activity.

The assessment has been undertaken when the perceived environmental impact is at its greatest during the construction stage.

In addition, the development will be assessed for the year of opening.

1. The assessment has considered the 'Do Nothing scenario', which assumes no Proposed Development , against the 'Do Something' scenario, which includes the same baseline traffic as the 'Do Nothing' but also includes Proposed Development traffic.

2. Construction traffic will travel to/from the development area using primary, secondary, and tertiary roads. Key haulage routes are likely to coincide with the primary, secondary, and tertiary roads that lead to the site.

   Key nodes along the haulage route have been identified in **Figure 14.14.**

   To quantify the volumes of traffic movements at key points on the road network adjacent to the site, a set of classified turning movement traffic counts were commissioned.

   Accordingly, classified counts were carried out on the 23rd of May 2023 at locations as shown in **Figure 14.14.**

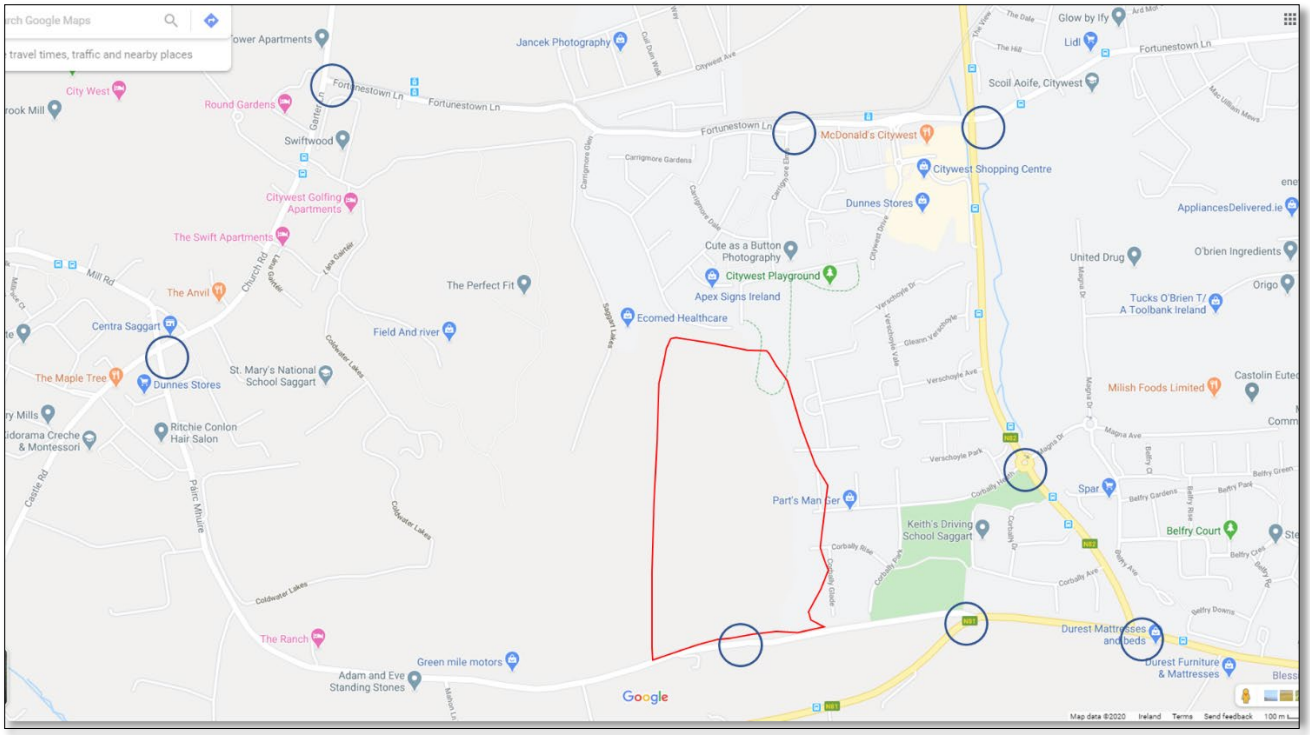

Figure Error! No text of specified style in document..**14 Traffic survey locations**

These locations are summarised in

*Table **Error! No text of specified style in document.**-7 Traffic Survey Locations*

Significance Criteria		
Site No	**Location**	**Type**
1	Citywest Road/Citywest Road	Signal Controlled Junction
2	Fortunestown Lane/Carrigmore	Priority Controlled junction
3	Garter Lane/ Fortunestown Lane	Signal Controlled Junction
4	Slade Road/Boherboy Road	Signal Controlled Junction
5	Development Access	Priority Controlled Junction

6	Boherboy Road/N81	Priority Controlled junction
7	N81/N82	Signal Controlled Junction
8	N82/Corbally Access	Roundabout

14.3.7 Temporal Scope

In line with EPA guidance, as outline in **Volume 1 Chapter 2: EIA Process and Methodology**, the duration of effects has been classified using the following: Momentary (seconds to minutes), Brief (<1 Day), Temporary (<1 Year), Short-term (1 to 7 years), Medium-term (7 to 15 years), Long-term (15 to 60 years), Permanent (>60 years).

The assessment has considered impacts arising during the construction stage (up to 5 years) which would be expected to be short-term in nature and from the operational stage which would be expected to be long-term to permanent.

The greatest environmental change will generally be when the project traffic is at its largest proportion of the total flow. It is therefore recommended that the environmental assessment should be undertaken at the construction/decommissioning phase, year of opening of the project and/or the first year of its operation.

The construction phase will generate movements for the importation and exportation of demolition waste, construction waste and construction materials.

It is expected that the majority of traffic generated by the Proposed Development will be generated during the operation phase through the general movement of residents of the development.

The assessment will consider the future years at which the peak construction traffic of the development occurs and when the Proposed Development is built out and fully operational.

The assessment scenarios are anticipated to be:

- Existing Baseline – ‘Do-Nothing’;
- Construction Phase - ‘Do-Nothing’+ Construction Traffic; ;
- Operational Phase - ‘Do-Nothing’+ Operational Traffic; and

- Cumulative Impact - 'Do-Nothing'+ Construction Traffic + cumulative development

14.3.8 Desktop study

Expansion Factors for Short Period Traffic Counts

TII Publications PE-PAG-02039 Project Appraisal Guidelines for National Roads Unit 16.1 - Expansion Factors for Short Period Traffic Counts May 2024 has been prepared to support the conversion of Short Period Traffic Counts to 24-HR, or to facilitate the estimation of short period traffic flows at any point in a year using only a sample dataset of traffic information.

The guidance achieves this by developing an annual traffic flow profile that considers time of day, day of week and month of year, thereby generating a series of indices to allow short period traffic counts from one period to be extrapolated to any period of the year, or to 24-HR. This is referred to as the Generic Expansion Factor Method.

14.3.8.1 Field work

Manual Classified Turning Count was undertaken on 23rd of May between 07:00 – 10:00 and 16:00 – 19:00.

This data was converted into 24 Hour Flows figures using Project Appraisal Guidelines for National Roads Unit 16.1 - Expansion Factors for Short Period Traffic Counts (PE-PAG-02039) (October 2016) published by TII.

The recorded data, measured in vehicles, is illustrated in **Table 14.8** along with the expansion factor and corresponding estimate of the AADT Flow.

*Table **Error! No text of specified style in document.**-8 Traffic Survey Locations*

AADT		
Site No	**Location**	**2025 AADT**
1	Citywest Road/Citywest Road	20 930
2	Fortunestown Lane/Carrigmore	7 578
3	Garter Lane/ Fortunestown Lane	12 513

4	Slade Road/Boherboy Road	13 328
5	Development Access	4 826
6	Boherboy Road/N81	14 487
7	N81/N82	18 337
8	N82/Corbally Access	15 147

14.3.8.2 Growth Factors

The estimated opening year for the Proposed Development is 2032. This has therefore been the focus of the road network assessment.

PE-PAG-02017-03 sets out growth rates for forecasting future traffic.

The factor used is outlined below:

*Table **Error! No text of specified style in document.**-9 Growth Factors*

Growth Factors		
Survey Year	Future Year	Growth Factor
Construction Phase		
2025	2032	1.081
Operational Phase		
2025	2032	1.091

These growth rates are applicable to Dublin for centralised growth. LV growth factors have been used.

14.4 Characteristics of the Proposed Development

A full detailed description of the Proposed Development is included in Chapter 2 of this EIAR.

14.4.1 Construction Phase

Construction activities, including but not limited to ground works, foundation pouring and equipment installation, will result in a temporary uplift in traffic on the local roads network.

Light and heavy vehicle construction traffic has been distributed across the surrounding network based on current directional flows as surveyed at the surveyed junctions.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles.

The envisaged traffic generated during the construction period will depend on the phasing of the construction which will be determined by the Client.

The majority of traffic generated by delivering materials during the project are envisaged to occur during the following construction elements:

- Site clearance
- Laying of internal road
- Concrete, steel, and other material deliveries to site during the construction of structures

For the construction of the proposed development, it will be necessary to transport the construction materials, equipment, and personnel to and from the work sites.

This includes (but is not limited to):

- Establishing the construction site compounds.
- The removal of surplus soil material, suitable surplus excavated material for reuse and unsuitable excavated material, which will be taken offsite to a site permitted for deposition.
- The importation of suitable soil material where required;
- The importation of relevant construction materials and equipment;

- The exportation of C&D Waste and C&D Waste Demolition;
- Transportation of workers to and from the site;

Several construction traffic movements will be undertaken by heavy goods vehicles, though there will also be vehicle movements associated with the appointed contractors and their staff.

The following is a non-exhaustive list of possible vehicles that will be used:

- HGV
- Rigid Truck
- Box Van
- Panel Van
- Concrete Truck
- Concrete Pump Truck
- Mobile Crane (various sizes)
- JCB (various sizes)
- Excavators (various sizes)
- Dump Truck

Specialist vehicles maybe required on occasion.

Details of size and weights of vehicles will be confirmed on appointment of a Main Contractor.

Access to the site will be via a newly formed access off the Boherboy Road. This will coincide with the finished development access.

Access to the site will be gated. The gate will be set back off the external road network to ensure that vehicles entering the site can do so without causing an obstruction on the main carriageway.

The contractor shall provide advanced warning signs, in accordance with Chapter 8 of the Department of the Environment's Traffic Signs Manual 2019, on the approach to proposed site access locations a minimum of one week prior to construction works commencing at the site.

There will be heras fencing secured to a minimum height of 2 metres surrounding the construction site or solid panel hoarding in areas with high/low viewing panels to help reduce unauthorised access to the constriction compound.

This fence will be checked daily and maintained as necessary, and it will be the responsibility of the Site Manager to open and lock the gates each working day to ensure the site is not left open and unattended at any time.

Access to the construction site will only be to authorised persons. During afterhours, security will be employed by the main contractors to ensure no unauthorised access.

Where possible, construction traffic and non-construction traffic will be separated for all modes of transport. Where the construction programme requires mixing of traffic, additional temporary traffic management measures will be put in place.

Deliveries of materials to site will generally be between the hours of 07:00 and 19:00 Monday to Friday, and 08:00 to 13:00 on Saturdays. No deliveries will be scheduled for Sundays or Bank Holidays.

There may be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times.

All access roads used by contractors will be monitored for mud and any construction materials and cleared using a shovel and broom and if required a mechanical road sweeper. The construction period for the proposed development is anticipated to be approximately 5 years from the commencement of the site works. This is subject to change and dependent on market conditions.

The proposed development is located on Boherboy Road. The haul route will be designed to ensure demolition waste, construction materials and construction waste is brought to the M50 in the shortest route possible while avoiding as many schools as possible (primary, secondary and Third Level).

This will ensure that HGVs and other larger construction and delivery vehicles will spend a minimum amount of time on regional roads and local streets whilst avoiding schools.

A description of the haulage routes is offered below:

From M50 to Development ~ 7 km, 11 minutes

Take Exit 11 of M50, Redcow -> Head southeast -> Keep right at the fork, follow signs for N81/Tallaght/Blessington -> At the roundabout, take the 3rd exit onto Tallaght Rd/N81 ->Slight right -> Turn right onto Blessington Rd/N81Continue to follow N and enter site.

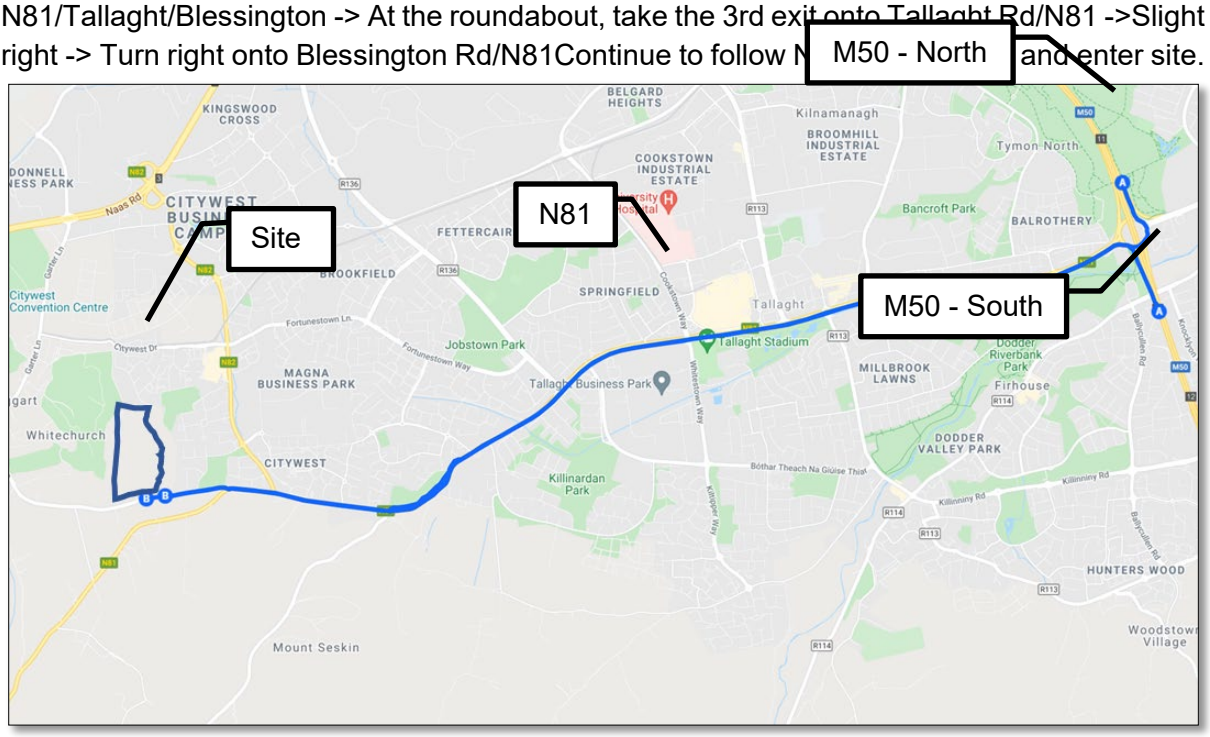

Figure Error! No text of specified style in document.**.15 Haul route to site**

From Development to M50 ~ 8 km, 11 minutes

Starting on Boherboy Road -> Slight left onto N81 -> Keep right to continue on Tallaght Rd/N81 -> At the roundabout, take the 3rd exit onto the M50 ramp to Southbound -> Merge onto M50

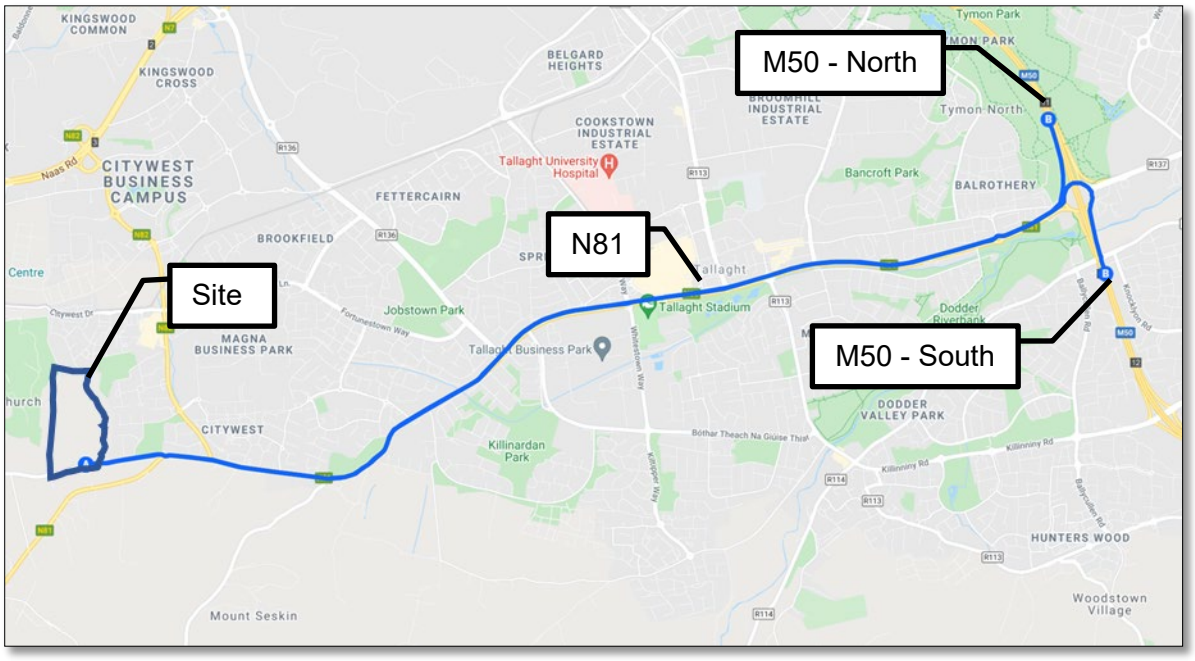

Figure Error! No text of specified style in document..**16 Haul route from site**

Arrivals and departures to the site compound are to be carried out in as few vehicle movements as possible in order to minimise potential impacts on the road network.

14.4.2 Operational Phase

14.4.3 Introduction

To the immediate north of the site is the Carrigmore residential estate, to the west are agricultural lands and a single dwelling, to the east is the Corbally residential estate while to the south is the Boherboy Road.

Access to the development will by via one no. new vehicular access point from the Boherboy Road, along with vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

14.4.4 Site Access

The proposed site access points are illustrated in **Figure 14.8.**

Figure Error! No text of specified style in document.**.17 Proposed Site Accesses**

Primary vehicular access to the development will be via Boherboy Road (Access No. 1), via Corbally Estate (Access No. 2) and via Carrigmore (Access No. 3).

A fourth access will be provided via Corbally Glade (Access No. 4). This will not provide vehicular access to the entire development as this portion of the site is separated by local watercourse. Pedestrian and cyclist access will be provided to the entire development via a bridge crossing the stream.

Pedestrian access will coincide with the vehicular access with additional access points onto Boherboy Road and through the Carrigmore District Park.

14.4.5 Servicing

An AutoTrack analysis has been carried on the internal service access to demonstrate its capability to cater for residents and service vehicles such as refuse vehicles.

The results of this analysis show that the proposed development can accommodate the anticipated service vehicles that will serve the proposed development.

The auto tracking has been undertaken noting the following from DMURS: Tighter junction radii in accordance with section 4.3.3 of DMURS has been provided. This results in larger vehicles crossing the centre line of the intersecting street or road. Such manoeuvres are acceptable when turning into/or between local or lightly trafficked link streets as keeping vehicle speeds low is of higher priority.

14.4.6 Car Parking

A total of 861 parking spaces will be provided for the development.

Parking will be provided within the curtilage of each house. On street surface car parking will be provided for the apartments, duplexes, creches and visitor car parking spaces.

14.4.7 Cycle Parking

A total of 711 cycle parking spaces will be provided for the development.

14.5 Potential Impact of the Proposed Development

14.5.1 Do-Nothing Scenario

If the Proposed Development does not proceed there will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.

14.5.2 Construction Phase

Construction of the proposed Boherboy Large-scale Residential Development (LRD) will generate temporary traffic movements associated with workforce travel, material and equipment deliveries, waste removal, and plant servicing. The development comprises a total of 611 dwellings (306 houses, 133 duplex units, and 172 apartments), along with supporting infrastructure, open spaces, and a single site access from Boherboy Road. Construction activity is expected to occur over multiple phases, with peak traffic generation arising when structural and fit-out works for the housing, duplex, and apartment blocks overlap.

Based on comparable large-scale residential schemes, it is estimated that the peak construction workforce will range between 200 and 260 personnel. Assuming an average car/van occupancy rate of 1.3 persons per vehicle (i.e., approximately 0.75 vehicles per worker), this equates to roughly 170 light vehicles (cars and crew vans) accessing the site per day during the peak construction phase. Two-way movements (arrivals and departures) would therefore total approximately 340–360 light-vehicle movements per day.

In addition to workforce travel, heavy goods vehicle (HGV) activity will occur throughout the construction period to facilitate the delivery of materials such as concrete, blockwork, steel, timber, and mechanical/electrical equipment, as well as waste and spoil removal. HGV traffic will vary depending on the construction stage but is expected to reach approximately 30–40 two-way HGV movements per day during peak periods (with short-term surges of up to 50 movements during major concrete pours or bulk material deliveries). This equates to approximately 10% of total daily movements, with HGVs scheduled outside of local commuter peak periods wherever possible to minimise impact on the surrounding network.

The combined daily construction traffic volume is therefore anticipated to range between 380 and 420 two-way movements per day, including both workforce and HGV trips. On exceptional pour or delivery days, total movements may temporarily rise to up to 500 two-way trips. The site will operate between 07:00 and 21:00, with the majority of activity occurring between 07:30–18:00. The distribution of construction traffic throughout the day is expected to follow typical industry patterns, with workforce arrivals concentrated in the morning (07:30–09:00) and departures in the late afternoon (16:00–18:00), while HGV and supplier deliveries will be spread more evenly through the mid-morning and early afternoon periods.

All construction traffic will route via the new access on Boherboy Road, which will act as the single point of entry and exit for the duration of the works. Appropriate management measures, including a Construction Traffic Management Plan, staff car-sharing strategy, and delivery time-slot system, will be implemented to reduce congestion and ensure safety along Boherboy Road and the local road network.

*Table **Error! No text of specified style in document.**-10 Estimated Construction Traffic Profile (07:00–21:00, Two-Way Movements)*

Time Period	Typical Site Activity	Estimated Two-Way Movements (All Vehicles)	Approx. Composition
07:00–08:00	Early workforce arrivals, initial deliveries	60–70	95% light, 5% HGV
08:00–09:00	Main workforce arrival peak	90–100	90% light, 10% HGV
09:00–10:00	Late arrivals and first bulk deliveries	35–40	60% light, 40% HGV
10:00–11:00	Steady site activity	25–30	40% light, 60% HGV
11:00–12:00	Mid-morning deliveries	25–30	40% light, 60% HGV
12:00–13:00	Lunch period	15–20	70% light, 30% HGV
13:00–14:00	Afternoon deliveries resume	25–30	40% light, 60% HGV
14:00–15:00	Continued site activity	25–30	40% light, 60% HGV
15:00–16:00	Early workforce departures	35–40	70% light, 30% HGV
16:00–17:00	Workforce departure peak	90–100	95% light, 5% HGV
17:00–18:00	Final workforce departures	45–55	95% light, 5% HGV
18:00–21:00	Occasional after-hours activity	10–15	90% light, 10% HGV

Total (07:00–21:00)	—	≈ 410–440 two-way movements/day	~90% light, 10% HGV

It is assumed that a total of 440 two-way movements/day will be generated during peak construction activities.

The traffic generated by the development is applied to each node to give the worst-case scenario and would take into account potential variations in traffic generated by the development depending on the phase in question.

*Table **Error! No text of specified style in document.**-11 Construction Stage Phase Impact*

Construction Phase Impact				
Site No	**Location**	**AADT (2032) - Do Nothing**	**Construction Flows – Do Something**	**% Impact**
1	Citywest Road/Citywest Road	22628	0	0.00%
2	Fortunestown Lane/Carrigmore	8193	0	0.00%
3	Garter Lane/ Fortunestown Lane	13529	0	0.00%
4	Slade Road/Boherboy Road	14410	0	0.00%
5	Development Access	5218	440	8.43%
6	Boherboy Road/N81	15662	440	2.81%
7	N81/N82	19825	440	2.22%
8	N82/Corbally Access	16376	0	0.00%

Table 14.12 presents the results of the operational phase assessment for the 2032 scenario, which represents the year of full build-out and occupancy of the Proposed Development. The analysis indicates a maximum increase in traffic volumes of up to 8.43% across the assessed links on the local highway network.

In accordance with the IEMA Environmental Assessment for Road Traffic (2023), the assessment focuses on links where traffic flows are predicted to increase by more than 30%, or by 10% or more in particularly sensitive areas such as residential streets, schools, or locations with high pedestrian activity.

As the predicted increases are below 10% on all links, the resulting changes in environmental conditions such as severance, delay, amenity, or road safety are considered not discernible in accordance with IEMA (2023). Projected changes in traffic flows of less than 30% are unlikely to result in perceptible environmental effects.

Consequently, the effects on transport and access during the operational phase are assessed as slight, adverse, long-term, and not significant in EIA terms for:

- Pedestrian severance, delay, amenity, fear and intimidation; and
- Driver delay.

With respect to accidents and road safety, the additional development traffic is not anticipated to materially alter baseline conditions. With appropriate internal design measures and compliance with DMURS principles, these effects are assessed as slight, adverse, long-term, and not significant in EIA terms.

14.5.3 Operational Phase

The development is likely to be built from 2025 to 2032, the length of its planning permission. The development will be built and occupied on a phased basis with full occupancy expected to happen in 2032.

*Table **Error! No text of specified style in document.**-12 Operational Phase Impact*

Operational Phase Impact				
Site No	**Location**	**AADT (2032) - Do Nothing**	**Development Flows – Do Something**	**% Impact**

1	Citywest Road/Citywest Road	22841	467	2.04%
2	Fortunestown Lane/Carrigmore	8270	601	7.26%
3	Garter Lane/ Fortunestown Lane	13657	134	0.98%
4	Slade Road/Boherboy Road	14546	103	0.71%
5	Development Access	5267	190	3.61%
6	Boherboy Road/N81	15810	53	0.34%
7	N81/N82	20012	342	1.71%
8	N82/Corbally Access	16530	900	5.45%

There are no highway links identified in the Table 14.9 with an increase of over 10% in operational vehicle movements.

Table 14.9 identifies the impact of the operational phase of the Proposed Development on the local highway network for the 2032 assessment scenario. The analysis indicates a maximum increase in traffic levels of up to 7.26% across the assessed links.

Due to the residential nature of the Proposed Development, no regular HGV movements are expected during the operational phase. Occasional heavy vehicle movements may occur on an ad hoc basis (e.g., maintenance, waste collection, or deliveries) but will not materially influence daily traffic flows.

The resulting effects on the surrounding local highway network are expected to be adverse in nature due to the increase in vehicle movements but long-term and slight in magnitude, reflecting the permanent operational character of the development.

In accordance with the IEMA Environmental Assessment for Road Traffic (2023), the assessment focuses on links where traffic flows are predicted to increase by more than 30%, or by 10% or more in sensitive areas such as residential streets or near schools.

As the forecast increases are below 10% across all assessed links, the projected changes are considered not discernible in environmental terms. Consequently, the effects on transport and access during the operational phase are assessed as slight, adverse, long-term, and not significant in EIA terms for:

- Pedestrian severance, delay, amenity, fear and intimidation; and Driver delay.

With respect to accidents and road safety, the additional development traffic is not anticipated to materially alter baseline conditions. Any potential impacts are assessed as slight, adverse, long-term, and not significant in EIA terms.

14.5.4 Potential Cumulative Impacts

In accordance with the requirements of the Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022) and the Transport Infrastructure Ireland (TII) Guidelines for the Assessment of the Effects of Road Schemes on the Environment (PE-PAG-02017), a review of other permitted and proposed developments in the vicinity of the site has been undertaken to determine the potential for cumulative effects in combination with the proposed development.

The assessment has considered recent and relevant residential, commercial, and mixed-use schemes within the Saggart–Citywest area that may contribute to cumulative effects on the surrounding transport network, land use patterns, or local amenity. These include Strategic Housing Developments (SHDs), Large-Scale Residential Developments (LRDs), and standard planning applications determined by both An Bord Pleanála and South Dublin County Council (SDCC).

The following table summarises the principal planning applications reviewed as part of this cumulative assessment. These schemes collectively represent a substantial quantum of new residential and mixed-use floor space that will, when fully built out, contribute to the overall level of activity and demand on the local transport infrastructure serving the wider Saggart, Fortunestown, and Citywest area.

*Table **Error! No text of specified style in document.**-13 Summary of Relevant Permitted and Proposed Developments Considered in the Cumulative Assessment*

Ref.	Site / Applicant	Main Proposal Description	Status / Outcome

SHD3ABP-300555-18	Parklands, Fortunestown / Garter Lane, Saggart (Greenacre Residential DAC)	Strategic Housing Development comprising 526 dwellings (houses, duplexes, apartments), a 4.3 ha district park, new signalised junction on Fortunestown Lane, two vehicular accesses on Garter Lane, and 804 car parking spaces.	Granted by An Bord Pleanála (2019), subject to conditions including separate delivery of crèche and community facilities.
SD22A/0357	Garters Lane, Saggart (Cairn Homes Properties Ltd)	Amendments to permitted SHD (ABP-308088-20), including minor alterations to unit mix and building layout; total number of dwellings reduced from 224 to 223; updated lift cores and internal layouts.	Granted by SDCC (2022); Extension of Duration lodged in 2025 (SD22A/0357/EP).
LRD24A/00062	Unknown (no public record found)	Reference number included for completeness; no verified file available on the SDCC or ABP portals.	Not applicable – no record located.
SHD3ABP-310570-21	Cooldown Commons & Fortunestown, Citywest (Cairn Homes Properties Ltd)	Construction of 421 apartments within 9 blocks (1–13 storeys), with retail, office (≈376 m²), and resident amenity areas (≈555 m²); 289 car and 650 bicycle spaces; includes public plaza adjacent to the Fortunestown Luas stop.	Granted by An Bord Pleanála (2022).
ABP-305556-19 / SD22A/0299 / SD22A/0422 / LRD24A/0009W	Citywest Shopping Centre Lands (Prop. Cairn Homes)	Mixed-use development of 290 apartments in 6 blocks, with crèche, 4 retail and 2 café/restaurant units; 153 car and 298 cycle spaces; associated public realm	Granted by ABP (2019); subsequent amendments approved by SDCC (2022–2025).

		works. Subsequent permissions addressed minor amendments (PV panels, layout adjustments) and change of use to a 220 m² medical clinic (Block F).	
SD20A/0232	Former Embankment Site, Boherboy / Saggart Road (Mardivale Ltd)	Demolition of former public house and incomplete structures; construction of 3-storey 129-bedroom hotel, 311 m² restaurant, and 45 aparthotel units in 3 blocks; provision of 120 car and 30 cycle spaces, new entrance and footpath along the L2008.	Granted by SDCC (May 2021).

Collectively, the developments listed above provide for over 2,100 new residential units, alongside hotel, retail, and community floorspace, and associated infrastructure upgrades. The majority of these schemes are located within a 1.5 km radius of the subject site and will contribute to cumulative increases in local traffic volumes, pedestrian and cyclist demand, and service connections to the regional road network, including Fortunestown Lane, the N82 Citywest Road, and Boherboy/Saggart Road (L2008).

These developments have been taken into account in traffic modelling and qualitative assessments, ensuring that the cumulative impacts on junction performance, construction traffic, and sustainable transport accessibility are appropriately reflected within this EIAR chapter.

14.5.5 Construction Phase

For the purposes of assessing potential cumulative impacts during the construction phase, only Planning Application Ref. SD20A/0232 (Former Embankment Site, Boherboy/Saggart Road) has been considered. This scheme, which provides for the demolition of existing structures and the construction of a hotel, aparthotel units, and a restaurant, is located in close proximity to the subject site.

It is considered probable that the construction haulage routes associated with SD20A/0232 will overlap with those proposed for the current development, particularly along the

Boherboy/Saggart Road (L2008) and its immediate connecting road network. Accordingly, this project has been included in the construction-phase cumulative assessment to capture any potential combined effects arising from overlapping HGV movements, construction workforce traffic, or temporary traffic management measures.

No other permitted or proposed developments in the surrounding area are expected to generate concurrent construction-phase traffic that would materially overlap with or compound the effects of the subject proposal.

Construction of the proposed Hotel and Aparthotel development at Boherboy / Saggart Road will give rise to temporary traffic associated with site clearance, demolition, material deliveries, waste removal, and workforce travel. The project involves the demolition of the existing public house and incomplete structures, followed by construction of a three-storey 129-bedroom hotel, a single-storey restaurant/bar, and three three-storey Aparthotel blocks comprising a total of 45 units, with associated car parking, substation, and landscaped areas. The total gross floor area of the new buildings is approximately 8,313 m².

During peak construction activity—expected to coincide with the overlapping superstructure, fit-out, and external works phases—the site is anticipated to accommodate a workforce of approximately 120 to 150 personnel. Based on an average occupancy of 1.3 persons per vehicle (i.e. 0.75 vehicles per worker), this equates to around 90–110 light-vehicle arrivals per day. Accounting for two-way movements (arrivals and departures), this represents approximately 180–220 light-vehicle movements per day.

HGV traffic associated with the delivery of concrete, steel, blockwork, mechanical/electrical plant, and waste removal will vary throughout the programme. At peak, it is expected that 20–30 HGVs per day will access the site, resulting in approximately 40–60 two-way HGV movements per day. HGV movements will be scheduled primarily between 09:00 and 16:00 to avoid the local commuter peaks and to ensure safe operation along the Boherboy / Saggart Road (L2008).

Combining workforce and goods vehicle activity, total daily construction traffic is expected to range between 320 and 370 two-way movements per day, with occasional short-term increases (to around 400) during large concrete pours or major delivery days. The existing Blessington Road access will remain for emergency use only throughout the construction period, with all regular construction traffic using the new site entrance on Boherboy / Saggart Road. The Contractor will prepare a Construction Traffic Management Plan to manage deliveries, define haul routes, and implement a Travel Plan for construction personnel to promote car-sharing and use of shared crew vans.

The temporal distribution of trips across the working day (07:00–21:00) is expected to follow normal construction industry patterns, as outlined in Table 14.15 below. The busiest periods will occur between 07:30–09:00 (worker arrivals) and 16:00–18:00 (departures), together accounting for roughly half of all daily traffic.

*Table **Error! No text of specified style in document.**-14 Estimated Construction Traffic Profile for SD20A/0232 (07:00–21:00, Two-Way Movements)*

Time Period	Typical Site Activity	Estimated Two-Way Movements (All Vehicles)	Approx. Composition	Notes
07:00–08:00	Early crew arrivals, light deliveries	**35–45**	90% light, 10% HGV	Site opening and setup
08:00–09:00	Main workforce arrival peak	**60–70**	90% light, 10% HGV	Peak inbound flow
09:00–10:00	Initial material deliveries	**25–30**	60% light, 40% HGV	Concrete and steel deliveries begin
10:00–11:00	Ongoing works / HGV deliveries	**20–25**	50% light, 50% HGV	Structural and façade materials
11:00–12:00	Continued deliveries / pours	**20–25**	40% light, 60% HGV	May include concrete pours
12:00–13:00	Lunch period	**10–15**	70% light, 30% HGV	Minimal site movements
13:00–14:00	Afternoon deliveries resume	**20–25**	40% light, 60% HGV	Fit-out and plant deliveries
14:00–15:00	Steady activity	**20–25**	40% light, 60% HGV	Mid-afternoon HGV window
15:00–16:00	Early workforce departures	**25–30**	70% light, 30% HGV	Trades leaving site
16:00–17:00	Workforce departure peak	**60–70**	95% light, 5% HGV	Evening egress period

17:00–18:00	Final staff departures	**30–40**	95% light, 5% HGV	Site closing
18:00–21:00	Occasional after-hours work	**5–10**	90% light, 10% HGV	Rare snagging or extended fit-out
Total (07:00–21:00)	—	**≈ 320–370 two-way movements per day**	~85% light, 15% HGV	Peak construction phase

The traffic generated by the development is applied to each node to give the worst-case scenario and would take into account potential variations in traffic generated by the development depending on the phase in question.

*Table **Error! No text of specified style in document.**-15 Construction Stage Phase Impact*

Construction Phase Impact				
Site No	**Location**	**AADT (2032) - Do Nothing**	**Construction Flows – Do Something**	**% Impact**
1	Citywest Road/Citywest Road	22628	0	0.00%
2	Fortunestown Lane/Carrigmore	8193	0	0.00%
3	Garter Lane/ Fortunestown Lane	13529	0	0.00%
4	Slade Road/Boherboy Road	14410	0	0.00%
5	Development Access	5218	810	15.52%
6	Boherboy Road/N81	15662	810	5.17%

7	N81/N82	19825	810	4.09%
8	N82/Corbally Access	16376	0	0.00%

During the construction phase, traffic generated by the Proposed Development was assigned to each assessment node to provide a worst-case scenario, accounting for potential variations in construction phasing and vehicle routing.

The analysis indicates a maximum uplift of 15.52% in daily traffic volumes at any assessed junction. This increase will be temporary, limited to the duration of the construction programme, and represents a worst-case daily scenario, assuming all deliveries occur via the same haul route.

In accordance with the IEMA Environmental Assessment for Road Traffic (2023), projected changes in traffic flows of less than 30% are considered unlikely to give rise to perceptible environmental effects, while changes of less than 10% are generally deemed to create no discernible environmental effect.

On this basis, the effects on transport and access during the construction phase are assessed as temporary, slight, adverse, and not significant in EIA terms for:

• Pedestrian severance, delay, amenity, fear and intimidation; and

• Driver delay.

With respect to accidents and road safety, temporary effects may arise due to construction vehicle activity. However, with the implementation of a Construction Traffic Management Plan (CTMP) and adherence to standard safety measures, these effects are assessed as temporary, slight-to-moderate, adverse, and not significant in EIA terms.

14.5.6 Operational Phase

The development is likely to be built from 2025 to 2032, the length of its planning permission. The development will be built and occupied on a phased basis with full occupancy expected to happen in 2032.

For the purpose of this assessment, it is considered that these movements would primarily be via Carrigmore, Corbally and Boherboy Road.

*Table **Error! No text of specified style in document.**-16 Operational Phase Impact*

Operational Phase Impact				
Site No	**Location**	**AADT (2032) - Do Nothing**	**Development Flows – Do Something**	**% Impact**
1	Citywest Road/Citywest Road	22841	1054	4.61%
2	Fortunestown Lane/Carrigmore	8270	1357	16.41%
3	Garter Lane/ Fortunestown Lane	13657	303	2.22%
4	Slade Road/Boherboy Road	14546	232	1.60%
5	Development Access	5267	429	8.15%
6	Boherboy Road/N81	15810	120	0.76%
7	N81/N82	20012	773	3.86%
8	N82/Corbally Access	16530	2034	12.30%

The maximum uplift in traffic volume on any assessed link is 16.41%, and there are no highway links identified in Table 14.16 with an increase of more than 30% in operational vehicle movements.

In accordance with the IEMA Environmental Assessment for Road Traffic (2023) guidance, projected increases in traffic flows of less than 30% are considered unlikely to give rise to perceptible environmental effects, while increases of less than 10% in sensitive areas are typically regarded as having no discernible environmental effect.

As all forecast changes fall below the 30% threshold, the associated effects on the surrounding highway network are predicted to be slight, adverse, and long-term, but not significant in EIA terms. These effects relate primarily to:

• Pedestrian severance, delay, amenity, fear and intimidation;

• Driver delay; and

• Accidents and road safety.

On this basis, the operational traffic effects of the Proposed Development are not considered significant in accordance with IEMA (2023) and EPA (2022) criteria.

14.5.7 "Do Nothing" Impact

If the Proposed Development does not proceed there will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.

14.6 Avoidance, Remedial & Mitigation Measures

14.6.1 Do-Nothing Scenario

If the Proposed Development does not proceed there will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.

14.6.2 Construction Phase

The successful completion of the Proposed Development will require significant coordination and planning, and a comprehensive set of mitigation measures will be put in place before and during the construction phase to minimise the effects of the additional traffic generated by the Proposed Development. The range of measures will include the following which are also set out in the Construction Traffic Management Plan:

- A detailed **Construction Traffic Management Plan** (CTMP), incorporating all the mitigation measures set out in the TMP submitted as part of the CTMP, will be finalised and agreed with the relevant road authorities and An Garda Síochána prior to construction works commencing on site. The detailed TMP will include the following:

- **Traffic Management Coordinator** – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management.

- **Communications**: Local residents in the area will be informed of any upcoming traffic related matters e.g., temporary lane/road closures (if required), via letter drops and door knocks. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or Local Authority during normal working hours. An "out of hours" emergency number will also be provided.

- **Travel Plans** – Given the site location, the assessment above has assumed the worst case i.e., that construction workers will drive to the site. The Main Contractor will be required to provide a

travel plan for construction staff, which will include the identification of routes to / from the site and identification of an area for parking.

14.6.3 Operational Phase

The mitigation measures proposed for the operational phase are based on the following criteria:

- Severance
- Pedestrian, cyclist and equestrian delay.
- Pedestrian, cyclist and equestrian amenity.
- Fear and intimidation.

Driver and passenger delay

Vehicular access to the development will be via 3 no. access points, as follows: (i) from the north via Carrickmore estate, (ii), to the east via Corbally estate and (iii), to the south via Boherboy Road. The proposed development includes for pedestrian and cyclist connections and accesses to adjoining lands to the north, east and west, and includes for cycling and pedestrian routes and infrastructure throughout the development.

Dedicated infrastructure will be provided for pedestrians, cyclists and other vulnerable road users. Were possible, this infrastructure will separate vehicles from pedestrians, cyclists and other vulnerable road users reducing the possibility of a road traffic collision occurring.

Where vehicles interact with pedestrians, cyclists and other vulnerable road users it will be done in a controlled manner. To that end, the proposed development includes a number of controlled crossings such as the signal-controlled junction from the Link Street to Oldcourt Road and Bohernabreena Road. Along the Link Street, a signal-controlled crossing has also been provided, linking the southern side of the development to the northern side.

Dedicated separated cycle infrastructure is provided along the Link Street with controlled crossings provided to accommodate cycling desire lines including to adjoining developments. Cyclist will share road space in areas of low traffic volume and low speed.

A number of uncontrolled crossings are provided throughout the development for pedestrians. These uncontrolled crossings have been designed to accommodate persons with visual impairments and mobility impairments. Pedestrians are given priority across junctions from the Link Street along the cycle track.

An Outline Travel Plan has been produced for future occupants of the proposed development.

A Travel Plan can be described as a transport demand management mechanism, that seeks to provide for the transportation needs of residents and visitors of the Proposed Development. The aim is to reduce demand for and use of cars by increasing the attractiveness and practicality of other modes of transport.

The Travel Plan includes measures to promote and improve the attractiveness of using public transport, cycling, walking, carsharing, flexible working or a combination of these as alternatives to drive-alone journeys to/from the development.

It should be considered as a dynamic process where a package of measures and campaigns are identified, piloted and monitored on an on-going basis.

The impact of these measures should be reviewed against a set of agreed targets, principally in relation to:

- A reduction in car journeys to and from the work site
- An increase in the number of people who share their journeys by car • A reduction in the need to travel, especially during the rush-hour periods
- Enabling residents and visitors use alternative modes of transport

A **Statement of Compliance with DMURS**, has been included as part of the planning documentation.

Central to the overall design approach is the need to ensure that pedestrians and cyclists are given the higher priority and more direct linkage than the private car. The proposed site layout and pedestrian and cycle links seek to give connectivity to the wider area to ensure that many local trips can be made using these sustainable travel modes through the provision of access to the canal tow path, which provide linkage to the surrounding area.

Vehicular access to the development shall be provided through a singular entrance and exit to the north-west of the site. Three further vehicle entrance points are located along the southern access road. Access to the site from these points shall be strictly limited to emergency services and maintenance vehicles. A new cycle lane shall run adjacent to the entrance road of the development and shall link Greenhill's Road to the north to the existing southern access road to the south. Design of the cycle infrastructure shall be based on guidance within the National Cycle Manual and DMURS for low speed and low use roads. Ample cycle parking is provided throughout the development.

The Proposed Development has been the subject to a **Stage 1/2 Road Safety Audit**. Road Safety Audit (RSA) involves the evaluation of road schemes during design and construction to identify potential hazards to all road users. All issues raised and proposed mitigation measures proposed, have been adopted within the development proposals.

14.7 Residual Effects

The assessment which forms the basis of this chapter has been wholly conservative to ensure a worst-case scenario is considered. This includes allowing for background traffic growth based on TII guidance and conservative trip generation estimates which do not fully take into consideration the full effect of the reduced car parking provision. On that basis, the assessment and the associated results are considered to represent the worst-case scenario.

14.7.1 Construction Phase

The impact of the construction stage is assessed as follows:

- During the construction phase there will be an increase in vehicle and HGV movements; however, these will be routed along the most appropriate haulage routes to minimise potential interaction with vulnerable road users and reduce disturbance to sensitive receptors.

- Construction traffic is expected to be limited during peak network hours, with most movements occurring outside commuter peaks. As a result, congestion-related impacts are expected to be negligible, and associated human health effects (e.g., from air quality or noise) are also considered negligible.

- The urban character of the surrounding road network, coupled with localised speed controls and the modest scale of additional traffic (<20% uplift), means there is expected to be no material increase in risk to pedestrians, cyclists, or other vulnerable road users.

The impact of the proposed development during construction will be managed by the measures set out in the Construction Traffic Management Plan (CTMP). These measures include defined access routes, on-site parking for construction workers, and restrictions on delivery hours to avoid local school and commuter peaks.

In accordance with the IEMA Environmental Assessment for Road Traffic (2023), projected changes in traffic flows of less than 30% are unlikely to result in perceptible environmental effects, while increases of less than 10% in sensitive areas are considered to have no discernible environmental effect. Given that the assessed uplift in construction traffic is below 20%, the resulting environmental effects are therefore imperceptible to slight, short-term, and not significant in EIA terms.

The increased traffic as a result of the construction phase is therefore minimal and will have a negligible impact on local network performance and road safety. The associated impact on human beings is limited and temporary. The enhanced pedestrian and cycle permeability delivered by the scheme, once complete, will contribute positively to sustainable mobility and active travel.

The potential for increased accidents is considered low, given the minor scale of traffic change and the controls set out in the CTMP.

Residual Effects
No additional mitigation is required beyond the embedded measures within the CTMP. The residual construction-phase effects are assessed as:

- Temporary, imperceptible, adverse effects on pedestrian severance, delay, amenity, fear and intimidation — not significant in EIA terms;
- Temporary, imperceptible, adverse effects on driver delay — not significant in EIA terms; and
- Temporary, imperceptible, adverse effects on accidents and road safety — not significant in EIA terms.

14.7.2 Operational Phase

It is considered that the impact of the operational phase of the Proposed Development on traffic and transport will be likely, neutral to slight, adverse, and long-term in nature.

The assessment of the cumulative scenario (“Do Maximum”) has considered the combined effect of other permitted or proposed developments within the wider Citywest / Fortunestown area that may contribute additional traffic to the local network. Based on the traffic modelling results, no link or junction within the study area is forecast to experience an uplift in traffic flows exceeding 10 percent as a result of cumulative development.

Given the high quality of the local road network and the modest increase in traffic volumes, the impact on road safety is considered negligible, and there are no predicted perceptible changes in journey times or travel conditions for any transport mode.

In accordance with the IEMA Environmental Assessment for Road Traffic (2023), projected changes in traffic flows of less than 30 percent are unlikely to result in perceptible environmental effects, while changes of less than 10 percent, even in sensitive areas, are regarded as not discernible. On this basis, the cumulative operational effects of the Proposed Development are assessed as imperceptible to slight, long-term, adverse, and not significant in EIA terms.

No additional mitigation is required beyond that already embedded in the design and management of the scheme. The residual operational-phase effects remain as reported in the assessment of effects section:

- Imperceptible, adverse effects on pedestrian severance, delay, amenity, fear and intimidation — not significant in EIA terms;
- Imperceptible, adverse effects on driver delay — not significant in EIA terms; and
- Imperceptible, adverse effects on accidents and road safety — not significant in EIA terms.

All operational impacts are long-term in duration and will persist while the development remains occupied, although they would be reversible should the site cease operation.

14.7.3 "Worst Case" Scenario

The greatest environmental change will generally be when the project traffic is at the largest proportion of the total flow. Therefore, as part of this environmental assessment and assessment was undertaken at the peak of construction and at the year of opening of the project, when the development is expected to be fully occupied.

It is therefore considered that the "Worst Case" Scenario has been assessed for both the Construction Phase and Operational Phase.

14.7.4 Residual Impacts

Table 17.18 4 provides a tabulated summary of the outcomes of the Transport and Accessibility assessment of the proposed development. Where significant positive effects are likely these are highlighted in bold **green** and where significant negative effects are predicted these are highlighted in bold **red**.

*Table **Error! No text of specified style in document.**-17 Summary of the Potential Impacts*

Summary of the Potential Impacts				
Receptor	**Description of Residual Effect**	**Additional Mitigation**	**Scale and Significance of Residual Effect**	**Nature of Residual**
Construction Stage				

Pedestrians	Change in pedestrian severance, delay, amenity, fear and intimidation	None	Imperceptible	Negative, likely, direct, reversible, short term and temporary.
Road users	Change in Driver delay	None	Imperceptible	Negative, likely, direct, reversible, short term and temporary.
Road users, pedestrians and cyclists	Change in road safety	None	Imperceptible	Negative, likely, direct, reversible, short term and temporary.
Operational Stage				
Pedestrians	Change in pedestrian severance, delay, amenity, fear and intimidation	None	Imperceptible	Negative, likely, direct, reversible, long term and permanent.
Road users	Change in Driver delay	None	Imperceptible	Negative, likely, direct, reversible, long term and permanent.
Road users, pedestrians and cyclists	Change in road safety	None	Imperceptible	Negative, likely, direct, reversible, long term and permanent.

14.8 Monitoring

14.8.1 Construction Phase

The proposed construction material haul routes will be monitored throughout the construction phase to identify any potential damage arising from construction traffic.

To ensure effective monitoring, the Main Contractor, in conjunction with South Dublin County Council, will undertake the following measures:

- Pre-construction condition surveys:
  Additional inspections and reviews of the designated haul routes will be undertaken at least one month prior to commencement of construction to record the existing condition of these roads.

- Baseline documentation:
  Surveys will include, as a minimum, video footage and photographic records confirming the condition of the carriageway surface, boundary treatments, and any overhead services along the haul routes. Visual inspections and photographic surveys will also be undertaken of bridges and culverts along the haul roads.

- Pavement condition assessment:
  Where requested by the Local Authority, a pavement condition survey will be undertaken to establish the baseline structural condition of the haul routes prior to commencement of works.

- Ongoing monitoring and maintenance:
  Throughout the construction phase, regular visual inspections will be carried out to identify any deterioration or damage caused by construction traffic. Where such damage occurs, the Local Authority will be notified, and repairs will be arranged promptly to restore the road to an acceptable standard and minimise disruption.

- Post-construction surveys:
  Upon completion of the construction phase, the pre-construction condition surveys will be repeated and a comparative assessment undertaken. Where deterioration attributable to construction traffic is identified, appropriate remedial works will be carried out by the Contractor to the satisfaction of the Local Authority.

14.8.2 Operational Phase

Given the nature of the Proposed Development as a residential scheme, no specific traffic monitoring is required during the operational phase beyond that undertaken as part of standard local authority network management and maintenance programmes.

However, any future review of mobility management performance or Travel Plan implementation may include monitoring of mode share, car parking utilisation, and uptake of sustainable transport modes to ensure continued compliance with the National Sustainable Mobility Policy (2022) and DMURS principles.

14.9 Interactions

The design team has engaged collaboratively throughout the design process to ensure that the Proposed Development adopts a sustainable, integrated approach that minimises environmental impacts and optimises multimodal connectivity.

Noise & Vibration
During the construction phase, a temporary, short-term increase in noise and vibration levels may occur due to construction traffic. These effects will be slight, adverse, and not significant in EIA terms. The impact of the operational phase on traffic and transport is assessed as neutral to slight, long-term, and not significant.

Air Quality
Post-construction, development traffic will contribute marginally to local traffic volumes. Given that no link exceeds a 10% uplift, the resulting impact on air quality is expected to be imperceptible to slight, long-term, and not significant.

Population
The development will be implemented in accordance with the Preliminary Construction Management Plan (PCMP) to minimise disruption to local residents during construction. During operation, the scheme's high permeability and high-quality pedestrian and cycle facilities will promote active travel, improve access to public transport, and support healthier lifestyles, consistent with Smarter Travel (2009) and the National Sustainable Mobility Policy (2022).

Land and Soil
During construction, any import or export of materials (associated with excavation or infilling works) will result in a minor, short-term increase in HGV traffic. As outlined in the PCMP, appropriate traffic management measures will be implemented to minimise these effects. The overall impact on land and soil-related traffic movements is assessed as temporary, slight, and not significant in EIA terms.

14.10 Difficulties Encountered When Compiling

There were no difficulties encountered when preparing this chapter.

14.11 References

The assessment presented in this chapter has been informed by the following chapters and technical appendices:

- EIAR Chapter 1Introduction and Methodology
- EIAR Chapter 2 Policy & Legislation

- EIAR Chapter 4 Project Description
- Appendix 14.1: Site Location
- Appendix 14.2: Survey Data
- Appendix 14.3: AADT – Development Impact
- Appendix 14.4: AADT - Cumulative Impact Environmental Protection Agency (EPA) Guidelines on the Information to Be Contained in the EIAR (2022);
- IEMA Impact Assessment Guide to Delivering Quality Development (2016);
- Transport Infrastructure Ireland (TII) Traffic and Transportation Assessment Guidelines (2014);
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- 'Guidelines for Traffic Impact Assessments' The Institution of Highways and Transportation (1994);
- National Roads Unit 16.1 - Expansion Factors for Short Period Traffic Counts (PE-PAG-02039) (October 2016) - TII; and
- The Route to Sustainable Commuting NTA (2001).

This chapter of the EIAR has been drafted based on the following legislation, policies and published guidance:

- National Legislation:
  - National Planning Framework (NPF) 2019
- Regional Policy:
- South Dublin County Development Plan 2022-2028

National guidance and industry standards:

- IEMA Environmental Assessment for Road Traffic, 2023

- Environmental Protection Agency (EPA) Guidelines on the Information to Be Contained in the EIAR (2022)

15 RISK MANAGEMENT

15.1 Introduction

This chapter sets out the assessment of the vulnerability of the Proposed Development to risks of major accidents and/or disasters. It assesses the expected effects on the environment of the Proposed Development due to the potential risk of major accidents and disasters, and the Proposed Developments vulnerability to same, including the methodology used for the assessment. The interactions and mitigation and monitoring measures are included in Chapters 16 and 17, respectively.

15.1.1 Quality Assurance

This chapter was prepared by Lakshmi Priya Mohan, Environmental Consultant at DNV. Lakshmi has a M.Sc. degree in Environmental Science degree from University College Dublin, a M.Sc. degree in Zoology from Ethiraj College for Women, India, and a B.Sc. in Zoology from Madras Christian College, India. Lakshmi has worked as an Environmental Consultant with DNV since 2023 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Effects Interactions and Mitigation and Monitoring chapters of the EIARs.

This chapter was reviewed by Gráinne Ryan, Principal EIA Consultant at DNV. Gráinne is an Environmental Consultant with 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Gráinne has a B.A, in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

15.2 Study Methodology

15.2.1 Scope and Context

The relevant legislation that applies to this chapter is the Planning and Development Regulations 2001 as amended, and in particular Schedule 6 – Information to be contained in EIAR. The following paragraph of Schedule 6, Paragraph 2(e)(i)(IV), specifically refers to "*a description of the likely significant effects on the environment of the proposed development resulting from … the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)*".

Paragraph 2(h) further expands with "*a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements*

of the Environmental Impact Assessment Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for, and proposed response to, emergencies arising from such events."

Annex III to the EIA Directive 2011/92/EU requires that "*the risk of accidents, having regard in particular to substances or technologies used*" arising from a project subject to EIA be assessed.

Additionally, the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), which implement the Seveso III Directive (2012/18/EU), and which revoked the 2006 Major Accident Regulations also applies to this chapter.

Further relevant legislation includes:

- The Safety, Health and Welfare at Work Act 2005, which outlines the responsibilities of employers and others to ensure the health and safety of persons at work, including risk assessments and emergency preparedness; and
- The Floods Directive (2007/60/EC), which establishes a framework for flood risk assessment and management, aiming to reduce adverse impacts on human health, the environment, cultural heritage, and economic activity.

15.2.2 Guidelines and Reference Material

Cognisance has been taken of the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022). This document follows the requirements laid out in the Directive 2014/52/EU.

Specifically, the EPA Guidelines state that the EIAR must take account of:

"…*the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk)… The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g., the potential effects of floods on sites with sensitive plants. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required. The EIAR should refer to those separate assessments while avoiding duplication of their contents*."

Reference has also been made to the *Guide to Risk Assessment in Major Emergency Management* (Department of the Environment, Heritage and Local Government (DoEHLG) Publication '2010) and the *National Risk Assessment for Ireland* (Office of Emergency Planning, Department of Defence (DOD),2020).

To ensure consideration of most-up-to-ate strategic and emerging risks, reference has also been made to the *National Risk Assessment 2023, National Risk Assessment 2024 – Overview of Strategic Risks,* and the EPA's *National Climate Change Risk Assessment*

(2025). These reports identify Ireland's most pressing and emerging risks across civil, environmental, geopolitical, technological, and economic domains.

A consolidated list of national hazards, drawing on these documents, is presented in Table 15-1.

Table 15-1 Consolidated List of National Hazards (Sources: Department of Defence (2020); National Risk Assessments (2023 and 2024) and EPA National Climate Change Risk Assessment (2025)

Hazard: Civil	**Hazard: Natural/Environmental**
• Large Crowd Event • Pandemic (including zoonotic Diseases, AMR) • Water Supply Distribution and Contamination • Food Chain Contamination • Animal Disease • Terrorist Incident (including hybrid/Cyber-CBRN threats) • Social Cohesion and Civil Unrest • Migration and Integration Pressures • Misinformation/Disinformation Impacting Public Response	• Storm • Snow and Ice (including prolonged low temperature) • Flooding (including pluvial, fluvial and coastal) • Coastal Erosion • Extreme Heat Events (and associated health impacts) • Biodiversity Loss • Climate Change (cumulative risk category) • Wildfires (emerging)
Hazard: Transportation	**Hazard: Technological**
• Maritime Incident • Air Incident • Disruption at Transport Hub (including airports, ports and rail stations) • Disruption to Critical Supply Chains (fuel, food, medicine)	• Structural Collapse (including dam, tunnel, bridge and building) • Nuclear Incident (Abroad) • Cyber Incident (including ransom, infrastructure attack, digital networks) • Disruption of Energy Supply (including oil, gas, electricity and digital networks) • Disruption to Communication Infrastructure (telecom and satellite systems) • Disruption to Undersea Infrastructure (e.g. data cables, pipelines) • Risks from Artificial Intelligence (AI) and Autonomous Technologies • Failure of Emerging Tech (e.g. 5G, IoT, automated control systems)
Hazard: Geopolitical	**Hazard: Emerging/Strategic**
• Terrorists Incidents • Armed Conflict Abroad • Hybrid Threats (e.g. disinformation, sabotage)	• AI-Enabled Drone Threats • Infrastructure Failure Due to Ageing or Climate Impacts

• Instability in Northern Ireland • Global Instability Affecting Supply Chains or Migration	• Food Security Issues (supply distribution, climate-related crop failure) • Economic Risks (protectionism, inflation, loss of competitiveness

15.2.3 Risk Assessment Methodology

The risk assessment methodology applied in this EIAR draws on both established emergency management principles and current national strategic risk policy. Hazard analysis and risk assessment are internationally recognised as essential steps in identifying challenges that may need to be addressed by society, particularly in the context of emergency planning and resilience building.

Mitigation as a risk treatment process involves reducing or eliminating the likelihood and/or the impact of an identified hazard (DoEHLG, 2010). While the National Risk Assessment 2023 (Department of the Taoiseach) presents Ireland's most up-to-date overview of strategic risks, it does not apply quantified recurrence intervals. Therefore, this EIAR adopts the likelihood classification framework previously used in A National Risk Assessment for Ireland (DOD, 2020), shown in Table 15-2, to support structured hazard evaluation.

The projects considered for potential cumulative developments are detailed in Chapter 2 of this EIAR. In addition to the standalone risk assessment, cumulative effects have been considered in the context of these developments. This includes potential interactions that may amplify risks related to emergency management, infrastructure capacity, and environmental resilience. The assessment draws on planning data and consultation with local authorities to ensure that cumulative risks are appropriately identified and mitigated.

Table 15-2 Classification of National Likelihood Criteria (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

National Likelihood Criteria		
Rating	**Classification**	**Average Recurrence Interval**
1	Extremely Unlikely	500 or more years between occurrences
2	Very Unlikely	100-500 year between occurrences
3	Unlikely	10-100 years between occurrences
4	Likely	1-10 years between occurrences
5	Very Likely	Less than 1 year between occurrences

15.3 Predicted Effects

The chapters within this EIAR identify that the Proposed Development has been designed in accordance with best practice and that the Proposed Development can be safely undertaken without risk to human health and the environment.

In order to understand the potential consequences and predicted effects of any major accident or disaster due to the Proposed Development, and the vulnerability of the Proposed Development, a desk study was undertaken. The assessment reviewed:

- The vulnerability of the Proposed Development to major accidents or disasters; and
- The potential for the Proposed Development to cause risks to human health, cultural heritage and the environment, as a result of that identified vulnerability.

A methodology has been used including the following phases:

Phase 1: Assessment

The DOD Consolidated List of National Hazards was used to identify a preliminary list of potential major accidents and disasters. Receptors covered by legislation were not included within the assessment, for example, the quarry operatives.

Phase 2: Screening

The list was screened and major events caused by geological faults or natural phenomena were not included as the site is not located in a tectonically active region. The likelihood of such events occurring is extremely low within the context of Ireland's stable geological setting. Examples of events screened include earthquakes, volcanic activity, and landslides. Risks such as building collapse, which have been comprehensively addressed through design measures and engineering controls, are acknowledged but not repeated in detail within this chapter to avoid duplication. Their integration into the design process demonstrates that such risks have been appropriately mitigated.

Phase 3: Mitigation and Evaluation

In the event that mitigation measures included did not mitigate the risk, then, the potential effects on receptors are identified in the relevant chapter. Table 15-3 lists the major accidents and/or disasters reviewed.

Table 15-3 Major Accidents and/or Disasters Reviewed

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Civil				
Large Crowd Event (An event with over 5,000 people)	N	Not considered vulnerable due to the nature of the Proposed Development, i.e., Residential Development.	N/A	N/A
Water Supply Contamination	Y	Waterborne diseases can be caused by consuming contaminated drinking water. No public health issues have been identified for the Proposed Development. The drinking water is to be supplied by a new connection to the existing 400mm watermain on Boherboy Road and distributed throughout the site in 225/180/110mm OD watermains.	Local water users	Chapter 7 Hydrology and Hydrogeology of this EIAR identifies the control measures required to avoid contamination of water supplies during operational works.
Food Chain Contamination	N	Not considered vulnerable.	N/A	N/A
Animal Disease	N	Not considered vulnerable.	N/A	N/A
Terrorist Incident	N	Not considered vulnerable.	N/A	N/A
Transportation				
Maritime Incident	N	Not considered vulnerable. The closest port is Dublin Port which is located approximately 16km northeast of the site.	N/A	N/A
Air Incident	N	Not considered vulnerable. The closest international airport is Dublin Airport, which is approximately 20km northeast of the site. Casement Aerodrome, Baldonnel is a military airbase located approximately 3.5km north of the site.	N/A	Public safety zones are discussed in Section 15.4.2 of this chapter.

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Transport Hub (Includes Airports, Ports and Rail Stations)	N	The site is not considered as a transport hub. Not considered vulnerable.	N/A	N/A
Natural				
Archaeology	N	There are no recorded archaeological sites located within the footprint of the proposed ground excavation works within the boundary of the Proposed Development. The easternmost site boundary comprises a townland, parish and barony delineation and is therefore of historic significance.	Cultural Heritage	Chapter 12 (Archaeology and Cultural Heritage) identifies the potential vulnerability of the project to effects on archaeological and cultural heritage resources and outlines measures to avoid, reduce, or mitigate adverse effects on known and potential heritage assets within and surrounding the site of the Proposed Development.
Landslides	N	Geological Survey Ireland (GSI) has mapped the majority of the site is located within an area with a 'low' landslide susceptibility (GSI, 2025). There are no recorded landslides at the site or within a 2km radius of the site (GSI, 2025)	Residents, service users, members of the public and nearby properties.	Chapter 6 (Land and Soils) identifies the vulnerability to landslides, and outlines measures incorporated into the design and construction methodology to avoid or mitigate such risks at the site of the Proposed Development.
Earthquakes	N	Earthquakes are not likely to occur in the vicinity of the site at a sufficient intensity to pose a risk for the Proposed Development.	N/A	N/A

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Floods/ Storm surge/tidal flooding	Y	The site is affected by flood risk zones A & B at its northern boundary. The Proposed Development includes a basin at the northwest corner of the site which is designed to provide direct compensatory storage. The inclusion of this basin means that while the Proposed Development will impact on existing flood risk zones at some locations and thus displace floodplain storage, it reduces the ground level at other locations, thereby providing compensatory storage.	Proposed Development	Chapters 7 (Hydrology) identify the vulnerability of the Proposed Development to flooding related risks and outline the findings of the Site-specific flood risk assessment (SSFRA), which confirms that appropriate measures have been incorporated into the design to manage and mitigate these risks in accordance with national guidance.
Severe weather such as storms, blizzards, droughts, tornados, heatwaves	N	Not considered vulnerable. In the event of severe weather events, the national meteorological service, Met Éireann, provides advance notice of severe weather, usually several days in advance. When appropriate, colour-coded weather warnings are issued. The Office of Emergency Planning works with the government departments and other key public authorities in order to ensure the best possible use of resources and compatibility across different emergency planning requirements.	N/A	Chapter 9 Climate of this EIAR assessed the vulnerability of the Proposed Development to severe weather.
Air Quality events	Y	Chapter 8 (Air Quality) identifies that the Proposed Development is not considered vulnerable to significant air quality effects. Nonetheless, it outlines proactive measures to minimise emissions during the construction phase, including the use of dust suppression techniques and the requirement for vehicles and machinery to be turned off when idle. These measures are consistent with best practice and are designed to ensure compliance with relevant air quality standards and guidance.	Residents/workers	Chapter 8 Air Quality of this EIAR identifies preventative measures to be taken with regards to protecting ambient air quality.
Wildfires	N	Not considered vulnerable due to the location of the site of the Proposed Development.	N/A	N/A

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Fire	N	Chapter 14 (Risk Management) identifies fire as a potential risk associated with the Proposed Development, particularly during the construction and operational phases. While the likelihood of fire is low, its consequences such as potential loss of life, property damage, and environmental harm, warrant consideration. The design incorporates fire safety measures in accordance with building regulations and fire codes, and emergency response planning has been integrated to ensure risks are appropriately managed.	Residents, service users, members of the public and nearby properties.	Section 15.4.1 identifies fire as a potential risk associated with the Proposed Development and outlines a range of fire prevention and mitigation measures. These include the integration of fire-resistant materials in construction, provision of adequate access for emergency services, and installation of fire detection and suppression systems in accordance with building regulations. These measures are designed to reduce the likelihood of fire and minimise its potential effect on occupants, property, and the surrounding environment.
Invasive species	Y	A subsequent habitat survey was undertaken of the Proposed Development site on the 7th April 2025 by Scott Cawley Limited. Two species of non-native, invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded within the Proposed Development site: Three cornered garlic *Allium triquetrum* and Spanish bluebell *Hyacinthoides hispanica*.	Native species/local biodiversity	Chapter 5 (Biodiversity) identifies the vulnerability of the project to invasive species and details measures to avoid the introduction or dissemination of invasive species to and from the site of the Proposed Development.
Technological				
Structural Collapse (Building)	N	This has been taken into consideration in the building design. All buildings have been designed to modern standards. No further assessment is required.	N/A	The design criteria of the buildings are in accordance with all relevant building design standards.
Structural Collapse (Dam, Bridge, Tunnel)	N	Not considered vulnerable as no dams, bridges or tunnels are proposed as part of the development.	N/A	N/A

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Flood defence failure	N	Appropriate drainage design, SuDS and attenuation design, have all been included in the design of the Proposed Development and will be installed according to appropriate regulations and guidelines.	Residents, service users, members of the public and nearby properties.	Chapter 7 (Hydrology and Hydrogeology) identifies the vulnerability of the project to flooding and outlines measures to manage and mitigate flood risk. These include site-specific drainage design, attenuation systems, and compliance with the recommendations of the SSFRA, ensuring that the Proposed Development remains resilient to potential hydrological effects.
Nuclear incident	N	Not considered vulnerable.	N/A	N/A
Cyber incident	N	Not considered vulnerable.	N/A	N/A
Disruption of energy supply (oil, gas, electricity)	N	Not considered vulnerable. ESB Networks maintain the electricity network in Ireland. Gas Networks Ireland maintain the natural gas network in Ireland.	N/A	Chapter 13 (Material Assets – Waste and Utilities) identifies the infrastructure requirements of the Proposed Development, including energy supply, and outlines measures to ensure adequate provision and resilience.
Utilities failure (communications)	N	Not considered vulnerable. In Ireland, the fixed-line communications market is primarily served by operators such as Eir, Virgin Media, Vodafone, and Sky Ireland, with Eir. Mobile telecommunications infrastructure is operated by Eir, Vodafone, and Three, who collectively account for the majority of mobile subscriptions. Coordination with service providers will ensure the integration of high-speed broadband and mobile connectivity in line with national infrastructure standards.	N/A	Chapter 13 (Material Assets – Waste and Utilities) identifies the telecommunications requirements of the Proposed Development and outlines measures to ensure reliable connectivity.

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Utilities failure (water supply)	N	Not considered vulnerable.	N/A	Chapters 7 (Hydrology and Hydrogeology) and 13 (Material Assets – Waste and Utilities) identify the water supply requirements of the Proposed Development and outline measures to ensure adequate and sustainable provision.
Utilities failure (wastewater, sewage)	N	Not considered vulnerable.	N/A	Chapters 7 (Hydrology and Hydrogeology) and 13 (Material Assets – Waste and Utilities) identify the wastewater and sewage treatment requirements of the Proposed Development and outline measures to ensure effective collection, removal, and treatment.
Utilities failure (solid waste)	N	Not considered vulnerable.	N/A	Chapter 13 (Material Assets – Waste and Utilities) identifies the solid waste management requirements of the Proposed Development and outlines measures for its removal and treatment. These include the provision of segregated waste collection facilities, adherence to local authority waste management protocols, and implementation of construction and operational waste minimisation strategies in line with national waste policy.

Major Accident or Disaster	Relevant for this Proposed Development?	Why relevant?	Potential Receptor	Covered within EIAR?
Industrial accidents (defence, energy, oil and gas refinery, food industry, chemical industry, manufacturing, quarrying, mining)	Y	The Dachser Ireland Limited Upper Tier Seveso site is located approximately 5.8km west of the site. Brenntag Chemicals Distribution (Ireland) Limited Lower Tier Seveso site is located approximately 3.5km northwest of the site. These sites are regulated under the EU Seveso III Directive due to the presence of hazardous substances. Despite their classification, these facilities are not considered to present a significant risk to the Proposed Development due to their distance from the site, the absence of direct physical or operational links, and the robust safety and containment measures required under Seveso regulations. Furthermore, the Proposed Development lies outside the consultation zones defined for emergency planning purposes, and no pathways for off-site effect have been identified.	N/A	N/A

Additional Consideration of Emerging and Strategic Risks

In addition to the major accidents and disasters reviewed in Table 15-3, emerging risks identified in the National Risk Assessment 2023, including digital exclusion, cyber threats, energy supply disruption, and AI-enabled technologies, have been considered in the context of the Proposed Development. Given the nature of the Proposed Development, these emerging risks are not expected to present significant vulnerabilities specific to the development. Standard design, operational protocols, and national infrastructure resilience frameworks are considered adequate to mitigate any indirect exposure to these strategic risks.

15.4 Management Plans

15.4.1 Fire Safety and Emergency Response Plan

Emergency Response Plans outlines the emergency preparedness measures to be implemented during the construction phase of the Proposed Development. These include the development of site-specific emergency response procedures prior to commencement of works, regular maintenance and safety checks, and coordination with local emergency services. Although the risk of fire is considered low due to the nature of the proposed operations, the plan accounts for increased labour, machinery, and vehicle movements on-site. The strategy ensures appropriate provision for fire safety, evacuation protocols, and incident management in line with health and safety regulations and best practice construction standards.

Potential fire risks may arise from:

- Fuel storage for machinery;
- Hot works (e.g. welding or maintenance); and
- Electrical faults or overheating of equipment.

These risks will be mitigated through standard site management practices, including:

- Secure and bunded fuel storage areas;
- Regular maintenance and inspection of plant and equipment;
- Fire extinguishers and emergency response equipment on-site;
- Staff training in fire safety and emergency procedures; and
- Clear access routes for emergency services.

These measures will ensure that fire risks are appropriately managed and that the site is prepared to respond effectively in the event of an emergency.

15.4.2 Public Safety Zone

Public Safety Zones (PSZs) are mapped out around airport runways to protect the public on the ground from possible aircraft crashes in populated areas. PSZs are used to prevent inappropriate use of land where the risk to the public is greatest, e.g., by limiting the type and allowable height of buildings and structures within the zones.

The closest airport to the site is Dublin Airport which is approximately 20km northeast of the site. There are no PSZs directly over the site of the Proposed Development. There are no PSZs associated with Dublin Airport that extend over or near the Proposed Development.

Casement Aerodrome, Baldonnel is a military airbase located approximately 3.5km north of the site and does not have mapped PSZs under national aviation safety guidance.

Given the distance from both Dublin Airport and Casement Aerodrome, and the absence of mapped PSZs in the vicinity, the risk of an aircraft-related incident affecting the Proposed Development is considered negligible. Therefore, aircraft strike risk is not considered relevant to the assessment of this site.

15.4.3 Potential Major Emergency Management Sites and Seveso Sites

Seveso Sites are defined as industrial sites that, due to the presence of dangerous substances in sufficient quantities, are regulated under Directive 2012/18/EU (Seveso III), which replaces earlier Directives 96/82/EC and 2003/105/EC. These sites are categorised as Lower or Upper depending on the type and quantity of hazardous substances stored at the site.

The Proposed Development is not classified as an establishment under the Control of Major Accident Hazard (COMAH) Regulations (SI 209 of 2015). The Proposed Development is not a regulated site under the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations (2015) (COMAH), which implement the Seveso III Directive (2012/18/EU), and it is not connected to a regulated site.

While the Proposed Development site is located within the Garda Division of Dublin Metropolitan Region (DMR) – West Division which includes the districts of Clondalkin, Ballyfermot, and Rathcoole. The closest Upper Tier Seveso Site is The Dachser Ireland Limited, Rathcool site located approximately 5.8km west of the site. The closest Lower Tier Seveso Site is the Brenntag Chemicals Distribution (Ireland) Limited, Rathcool located approximately 3.5km northwest of the site. The Figure 15-1 shows the Proposed Development site as a red star, the Dachser Ireland Limited to the west and the Brenntag Chemicals Distribution (Ireland) Limited to the northwest of the site.

Based on the distance of the Proposed Development from any Seveso Sites the risk of a potential major emergency is not considered relevant to this Proposed Development.

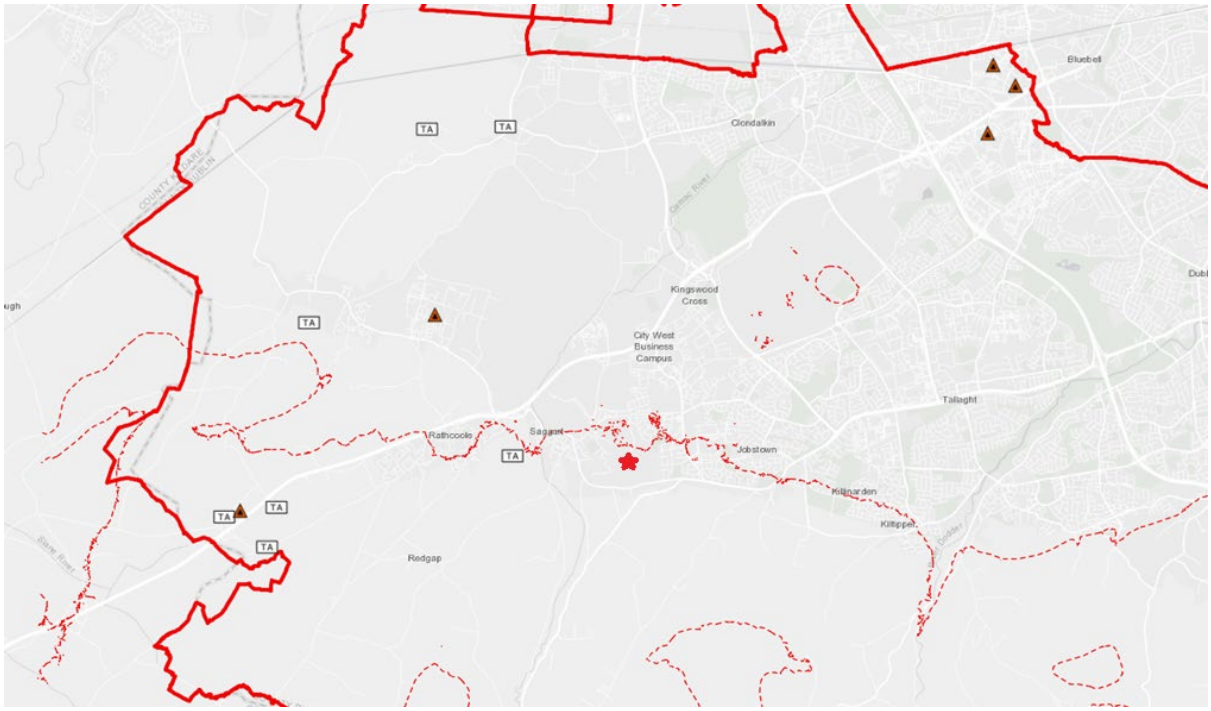

Figure 15-1:Seveso Sites located within near to the Proposed Development (South Dublin County Development Plan 2022-2028)

15.4.4 Flood Risk

The surface water features within the site recorded on the EPA database (EPA, 2025) are as follows:

- The Corbally Stream (also known as the Brownsbarn Stream) is a tributary of the Camac River. It flows along the eastern and northern boundaries of the site in a northerly direction before joining the Camac River approximately 2.1km north of the site.
- The Coldwater Stream originates along the western boundary of the site, flowing northward before discharging into the Corbally Stream at the site's northern boundary.
- The Cooldown Stream originates within the site and flows in a south-to-north direction, ultimately discharging into the Corbally Stream at the site's northern boundary.

The site is affected by flood risk zones A & B at its northern boundary. The Proposed Development includes a basin at the northwest corner of the site which is designed to provide direct compensatory storage. The inclusion of this basin means that while the Proposed Development will impact on existing flood risk zones at some locations and thus displace floodplain storage, it reduces the ground level at other locations, thereby providing compensatory storage (Kilgallen & Partners Consulting Engineers, 2025).

15.4.5 Dust Management Plan

Strategies for dust management during the operational phase of Proposed Development are detailed in Chapter 8, Air Quality. With respect to the potential impacts from uncontrolled dust emissions identified in Chapter 8, the key objective of the Proposed Development is to manage activities to ensure any significant increase in dust emissions are minimised.

15.4.6 Noise Management Plan

Strategies for noise management during the operational phase of Proposed Development are detailed in Chapter 10, Noise and Vibration. With respect to the potential noise impacts identified in Chapter 10, the key objective of the Proposed Development is to manage activities to ensure any significant increase in noise emissions are minimised.

15.4.7 Spill Response Plan

Chapter 6, Land and Soils, and Chapter 7, Hydrology and Hydrogeology, has assessed the potential for spillages during the Proposed Development. Only small volumes of fuel/oils will be present on-site and therefore no significant effects are expected.

Fuel storage and refuelling procedures will be developed for the site; fuel will be stored in bunded tanks and spill kits will be available onsite including in vehicles operating onsite. Staff will be familiar with emergency procedures for in the event of accidental fuel spillages. All works will be undertaken in accordance with conditions of granted planning.

15.4.8 Invasive Alien Species

The spread of invasive alien species poses a risk to surrounding ecology and biodiversity. A subsequent habitat survey was undertaken of the Proposed Development site on the 7th April 2025 by Scott Cawley Limited. Two species of non-native, invasive plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 were recorded within the Proposed Development site: Three cornered garlic *Allium triquetrum* and Spanish bluebell *Hyacinthoides hispanica*.

Chapter 5 (Biodiversity) of this EIAR details the mitigation measures to prevent the spread of invasive species to and from the site of the Proposed Development.

15.5 Residual Effects

Control measures will be put in place on site for health and safety and environmental management as per conditions of the planning permission, relevant codes of practices and relevant legislation.

Through the implementation of mitigation measures detailed in the relevant technical chapters of this EIAR, there are no identified incidents or examples of major accidents and or natural disasters that present a sufficient combination of risk and consequence that would lead to significant residual effects or environmental effects as a result of the Proposed Development, alone or in combination with other projects.

15.6 Monitoring

There is no monitoring required with regards to risk management. All monitoring proposals for the interacting chapters have been detailed in the relevant technical chapters and are included in Chapter 17 Mitigation Measures and Monitoring.

15.7 Difficulties Encountered When Compiling

No difficulties were encountered in completing this chapter.

15.8 Conclusion

The risk assessment undertaken as part of this EIAR has considered a comprehensive range of potential risks, including flooding, fire, industrial accidents, air quality, waste management, and infrastructure vulnerabilities. Each relevant chapter has identified specific risks and outlined appropriate mitigation measures in accordance with national and local planning guidance, including the Planning System and Flood Risk Management Guidelines and the South Dublin County Development Plan 2022–2028.

The site is located in Flood Zone A & B at its northern boundary and is not considered vulnerable to significant flood risk. Nearby Seveso sites has been assessed and are not deemed to pose a risk to the Proposed Development due to their distance and containment protocols. Fire risk is low and will be managed through a site-specific Emergency Response Plan. Air quality, waste, water, and utility infrastructure have been addressed through coordinated planning and design.

Taking all of the above into account, the site is considered suitable for development, with risks appropriately identified, assessed, and mitigated to ensure the safety, resilience, and sustainability of the Proposed Development.

15.9 References

- Chapters 4 to 14 of Volume 2 of this EIAR
- South Dublin County development Plan 2022-2028
- Environmental Resources Management Ireland Ltd (2005) Public Safety Zones Report
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Garda Mapping Section – Seveso Sites Ireland WebMap https://www.arcgis.com/home/item.html?id=a01b5a0a6ff24f10adff30beaa3b6fd0
- Irish Water Greater Dublin Area water restrictions chart https://www.water.ie/help/supply/water-shortages/
- Office of Emergency Planning (2020) 'A National Risk Assessment for Ireland 2020' Department of Defence Publication
- Statutory Instrument (SI). No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018

16 INTERACTIONS

16.1 Introduction

As a requirement of the Planning Regulations and the Environmental Protection Agency's '*Guidelines on information to be contained in Environmental Impact Assessment Reports'* (2022), interrelationships between various environmental aspects must be considered when assessing the impact of the Proposed Development, as well as individual significant effects. The significant effects of the Proposed Development and the proposed mitigation measures have been detailed in the relevant chapters of this EIAR. However, as with all developments that pose potential environmental effects, there also exists potential for interactions/interrelationships between the effects of different environmental aspects. The results may exacerbate or ameliorate the magnitude of effects. This chapter of the EIAR addresses the interactions between the various environmental factors of the Proposed Development.

The following Section is directed by Article 3 section 1(e) of the EIA Directive. The EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022), Advice Notes for Preparing Environmental Impact Statements (Draft, September 2015) and OPR Practice Note PN02 Environmental Impact Assessment Screening (June 2021) were also considered.

Article 3 of the Directive states:

1. The Environmental Impact Assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:
    a) Population and Human Health;
    b) Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
    c) Land, Soil, Water, Air and Climate;
    d) Material Assets, Cultural Heritage and the Landscape;
    e) the interaction between the factors referred to in points (a) to (d)

16.2 Study Methodology

The interactions between effects on different environmental factors have been addressed throughout this EIAR. Close co-ordination and management with the EIAR team was carried out to ensure that all likely relevant interactions were addressed at the scoping stage of the EIAR, and interactions have been adequately assessed.

Following an assessment of the EIAR, a matrix was produced to display where interactions between effects on different factors have been addressed. This has been carried out by use of chapter headings included in the EIAR and details of any interaction during all phases of the Proposed Development.

16.3 Competency of the Authors

This chapter has been prepared by Aisling Jones, Environmental Consultant with DNV. Aisling has a Bachelor of Civil Law degree from University College Dublin and a Master of Science degree in Environmental and Climate Law also from University College Dublin. Aisling has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Windfarm Feasibility Studies, Construction Environmental Management Plans (CEMP)s, Interactions, Mitigation and Monitoring, Material Assets (Waste and Utilities) Chapters of Environmental Impact Assessment Reports (EIAR)s.

This report was reviewed by Grainne Ryan, Principal EIA Consultant at DNV. Gráinne is an Environmental Consultant with over 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Gráinne has a B.A, in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

16.4 Interactions

The following matrix has been produced to show potential significant interactions between the different factors that have been addressed, see Table 16-1.

In preparing the EIAR each of the specialist consultants have and will continue to liaise with each other and will consider the likely interactions between effects predicted as a result of the Proposed Development during the preparation of the proposals for the site and this ensures that mitigation measures are incorporated into the design process.

As this EIAR document has been prepared by a number of specialist consultants an important aspect of the EIA process is to ensure that interactions between the various disciplines have been taken into consideration.

The principal interactions requiring information exchange between the environmental specialists and the design team are summarised in Table 16-2 to Table 16-12.

Table 16-1: Interactions between Factors

Interaction	4. Population and Human Health	5. Biodiversity	6. Land and Soils	7. Hydrology and Hydrogeology	8. Air Quality	9. Climate	10. Noise and Vibration	11. Landscape and Visual	12. Archaeology and Cultural Heritage	13. Material Assets: Waste and Utilities	14. Material Assets: Traffic and Transport
Population and Human Health		X	✓	✓	✓	✓	✓	✓	X	✓	✓
Biodiversity	X		✓	✓	✓	✓	X	✓	X	X	X
Land and Soils	X	✓		✓	✓	✓	X	X	X	✓	✓
Hydrology and Hydrogeology	✓	✓	✓		X	✓	X	X	X	✓	X
Air Quality	✓	✓	✓	X		✓	X	X	X	X	✓
Climate	X	X	✓	X	X		X	X	X	✓	X
Noise and Vibration	✓	✓	X	X	X	X		X	X	X	✓
Landscape and Visual Amenity	✓	X	✓	X	X	X	X		X	X	X
Archaeology, Architectural and Cultural Heritage	X	X	X	X	X	✓	X	✓		X	X
Material Assets: Waste and Utilities	X	X	✓	✓	X	✓	X	X	X		X
Material Assets: Traffic and Transport	X	X	✓	X	✓	✓	✓	X	X	✓	

x	No Interaction
✓	Potential Interaction
	N/A

Table 16-2. Population and Human Health

Population and Human Health	
Summary	
Chapter 4 of this EIAR (Population and Human Health) details the direct and indirect effects of the Proposed Development on Population and Human Health; and sets out any required mitigation measures where appropriate. The Proposed Development has the potential to cause dust nuisances during the construction phase as well as noise and vibrations from plant machinery and traffic.	
Interactions	
Hydrology and Hydrogeology	Interactions between water and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of impacts on local drinking water. However, the mitigation measures outlined in Chapter 7 outlines that Proposed Development will not result in significant effects on water which therefore will not have a significant effect on the local population.
Air Quality	Interactions between air quality and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of impacts on air quality. However, the mitigation measures outlined in Chapter 8 Air Quality outlines that Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected.
Noise and Vibration	Interactions between noise and population and human health have been considered. The Proposed Development has the potential to cause health issues as a result of noise and vibrations. However, the mitigation measures outlined in Chapter 10 Noise outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.
Landscape and Visual	Interactions between landscape and visual, and human health have been considered. The Proposed Development has the potential to cause nuisance to the local population. However, the mitigation measures outlined in Chapter 11 Landscape and Visual outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.
Material Assets-Traffic	Interactions between transport and human health have been considered. The Proposed Development has the potential to cause a nuisance to the local population. However, the mitigation measures outlined in Chapter 14 Traffic and Transport outlines that Proposed Development will not result in significant effects which therefore will not have a significant effect on the local population.

Conclusions
Potential effects have been outlined in the respective Chapters specified above. The mitigation measures outlined in the respective Chapters outlined above will ensure that there will be no significant adverse effects on the health of the population situated around the Proposed Development.

Table 16-3: Biodiversity

Biodiversity	
Summary	
Chapter 5 of this EIAR, *Biodiversity,* details the direct and indirect effects of the Proposed Development on the local flora and fauna; and sets out any required mitigation measures where appropriate. Biodiversity interacts with several environmental factors including land and soils, hydrology, air quality, climate and microclimate and, noise and vibrations Chapters of the EIAR. Changes to these environmental factors could result in significant impacts on biodiversity such as the following:	
Interactions	
Land & Soils	Interactions between soils & land and biodiversity can occur through the spread of any hazardous material/contaminated land which may occur during the construction stage. The spread of land contaminated with potentially hazardous material could result in habitat degradation of habitats within the Proposed Development site and adjacent/downstream designated sites and their associated qualifying interests. Following the implementation measures outlined within the Construction Environmental Management Plan (CEMP) impacts to habitats, flora and fauna from soils and land interactions are not predicted to be significant.
Hydrology	Interactions between hydrology and biodiversity including habitats, flora and fauna can occur through impacts to water quality either arising from an accidental pollution event or increased sedimentation during the construction stage or an accidental pollution event during the operational stage. This interaction has the potential to result in significant impacts on hydrologically connected habitats and sensitive fauna that rely on these habitats.
Air Quality	Interactions between air quality and flora and fauna in adjacent habitats and designated sites can occur during the construction stage due to dust emissions arising from construction works. This interaction has the potential to result in significant impacts on biodiversity. However, once the dust minimisation measures outlined in the CEMP accompanying this report are implemented, impacts to flora and fauna are not predicted to be significant.
Noise & Vibrations	Interactions between noise and sensitive fauna, namely birds, bats and badgers can occur and arise from increased noise levels during the construction stage. This interaction has the potential to result in significant impacts and has been assessed when considering disturbance impacts during construction. However, for reasons outlined in the relevant sections above (i.e. 5.5) impacts to fauna from noise interactions are not predicted to be significant.

Conclusions
Potential negative impacts have been identified for Land & Soils, Hydrology, Air Quality and Noise & Vibrations. Mitigation measures have been outlined in Chapters 6, 7,8 and 10 respectively.

Table 16-4: Land and Soils

Land and Soil	
Summary	
Chapter 6 of this EIAR, *Land and Soils*, details the direct and indirect effects of the Proposed Development on the local land, soils, and geology; and sets out any required mitigation measures where appropriate. There are a number of potential pollutants associated with the construction and operational phases which have the potential to impact on the environment. The excavation and infilling of soils at the site have the potential to generate nuisance impacts such as dust, noise and sediment run-off. Consideration is given to habitats and species protected by national and international legislation or considered to be of particular conservation importance.	
Interactions	
Population and Human Health	An assessment of the potential effect of the Proposed Development on human health is included in Chapter 4 of this EIAR. There is a potential risk of dust generated from excavation and stockpiling of soil during the construction phase of the Proposed Development posing a human health risk in the absence of standard avoidance and mitigation measures which will be implemented to be protective of human health. Appropriate industry standards and health and safety legislative requirements will be implemented during the construction phase of the Proposed Development that will be protective of site workers. The design and construction of the Proposed Development will be undertaken in accordance with current Building Regulations which will ensure that the site will be suitable for use for the operational phase as a residential development taking account of the geological site setting.
Biodiversity	An assessment of the potential effects of the Proposed Development on the Biodiversity of the site, with emphasis on habitats, flora and fauna which may be effected as a result of the excavation and importation of materials to the site are included in Chapter 5 of this EIAR. It also provides an assessment of the effects of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these effects.
Hydrology and Hydrogeology	An assessment of the potential effect of the Proposed Development on the hydrological and hydrogeological environment is included in Chapter 7 of this EIAR. In the absence of avoidance, remedial, and mitigation measures, construction activities may potentially create pathways for potential sources of contamination to enter underlying groundwater. During the construction phase of the Proposed Development, groundwater vulnerability is expected to temporarily increase. Construction activities will involve the use of potentially hazardous materials such as cementitious materials, fuels, oils, and other substances. An uncontrolled release of these materials, whether

	through containment failure or handling accidents, could affect the surrounding environment. In addition, in the absence of avoidance, remedial and mitigation measures, there is a potential for sediment from excavated soils to enter water runoff and discharge into the receiving Corbally stream, Coldwater stream and Cooldown stream. Procedures for the protection of the receiving water environment are set out in Chapter 7 of this EIAR.
Air Quality and Climate	The excavation of soils across the site and the temporary stockpiling of soils pending reuse or removal offsite has the potential to generate nuisance effects (i.e., dust) during the construction phase of the Proposed Development. An assessment of the potential effect of the Proposed Development on air quality is included in Chapter 8 of this EIAR.
Landscape and Visual	During the construction phase and into the operational phase of the Proposed Development, the site landscape will undergo a change from undeveloped lands to residential use. An assessment of the potential effect of the Proposed Development on the receiving landscape is included in Chapter 11 of this EIAR.
Material Assets: Traffic, Transport, Utilities, Infrastructure and Waste	An assessment of the potential effect of the Proposed Development on the material assets (waste and utilities) and material assets (traffic and transport) are included in Chapter 13 and Chapter 14 of this EIAR, respectively. Where possible, it is intended to retain and re-use the excavated soil and subsoil on the site for engineering fill and landscaping. However, where required, unsuitable soil and subsoil will be removed offsite in accordance with all statutory legislation. There is also a requirement to import soil, subsoil and aggregate materials during the construction phase of the Proposed Development.
Conclusions	
Potential impacts have been outlined in the respective Chapters specified above. The mitigation measures outlined in the CEMP, and the respective Chapters outlined above, will ensure that there will be no significant adverse impacts on the receiving land, soil and geology associated with the construction phase and the operational phase of the Proposed Development.	

Table 16-5: Hydrology and Hydrogeology

Hydrology and Hydrogeology	
Summary	
Chapter 7 of this EIAR, *Hydrology and Hydrogeology*, provides an assessment of the potential impacts of the Proposed Development on hydrology, water and hydrogeology and sets out any required mitigation measures where appropriate. Consideration is given to habitats and species protected by national and international legislation or considered to be of particular conservation importance.	
Interactions	
Population and Human Health	An assessment of the potential effect of the Proposed Development on human health is included in Chapter 4 of this EIAR. No public health issues associated with the water (hydrology and hydrogeology) conditions at the site have been identified for the construction phase or operational phase of the Proposed Development. Appropriate industry standard and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers.
Biodiversity	An assessment of the potential impacts of the Proposed Development on the biodiversity of the site, with emphasis on habitats, flora and fauna which may be impacted, as is included in Chapter 5 of this EIAR, such as potential pollution of waterbodies impacting on flora and fauna in the absence of mitigation measures. Chapter 5 of this EIAR addresses impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.
Land and Soils	An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the construction phase and operational of the Proposed Development is set out in Chapter 6 of this EIAR. In the absence of avoidance and mitigation measures, there is a potential for sediments from excavated soils entering the drainage network and tracking downstream during the construction phase.
Material Assets Waste and Utilities	An assessment of the potential impact of the Proposed Development on the material assets including built services and infrastructure has been set out in Chapter 13 of this EIAR. During the construction phase of the Proposed Development, discharges of water to the public foul sewer will be in accordance with the necessary discharge licence issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations.

	During the operation phase of the Proposed Development, any discharges to the public foul sewer and supplementary water supply to the Proposed Development will be under consent from UE.
Conclusions	
The protective/avoidance/mitigation measures that will be applied as set out in the CEMP will ensure that the Proposed Development will not give rise to any likely significant impacts.	

Table 16-6: Air Quality

Air Quality	
Summary	
Chapter 8 (a) of this EIAR, *Air Quality*, provides an assessment of the potential impacts of the Proposed Development on ambient air quality and sets out appropriate mitigation measures where necessary. Air quality does not have a significant number of interactions with other topics. The greatest potential effects on air quality include dust from the construction phase of the Proposed Development.	
Interactions	
Population and Human Health	The most significant interactions are between human beings and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the Proposed Development will ensure that the impact of the Proposed Development complies with all ambient air quality legislative limits and therefore the predicted impact is long term and neutral with respect to human beings.
Biodiversity	Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised and the effect on biodiversity will be short term, imperceptible and neutral.
Land and Soils	Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils and the water environment (hydrology) in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that interactions between air quality and land and soils and hydrology will be short-term and imperceptible.
Traffic	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 considered to be imperceptible.
Conclusions	
Mitigation measures employed at the Proposed Development will ensure that no significant impacts occur. No other significant interactions with air quality have been identified.	

Table 16-7: Climate

Climate	
Summary	
Chapter 9 of this EIAR, *Climate*, provides an assessment of the potential impacts of the Proposed Development on ambient climate and sets out appropriate mitigation measures where necessary. The greatest potential effects on climate include dust from the construction phase of the Proposed Development.	
Interactions	
Population and Human Health	Human health and well-being are closely linked to climate factors. Climate change can exacerbate health issues such as heat stress, respiratory conditions, and vector-borne diseases. While the Population and Human Health chapter focuses on direct health determinants, the Climate Chapter also considers indirect pathways through which climate-related measures may influence public health. These include: • Air quality impacts from construction and operational traffic, which are addressed in parallel with climate assessment; • Noise and vibration disturbance, particularly in relation to sensitive receptors such as residential dwellings; • Green infrastructure and landscaping, which contribute to urban cooling, improved air quality, and enhanced amenity; • SuDS and water management systems, which reduce flood risk and associated health hazards; and • Traffic emissions, which were assessed using DMRB LA 114 criteria and scoped out for both construction and operational phases, confirming no significant climate-related health effects These measures support climate resilience and help safeguard public health in the context of a changing climate.
Biodiversity	Climate change can alter habitat conditions, encourage spread of invasive species, disrupt species distributions, and affect ecological balances. These shifts may impact local flora and fauna, particularly in sensitive coastal and estuarine environments adjacent to the Proposed Development. The Biodiversity chapter outlines a suite of mitigation and enhancement measures that directly support climate resilience, including: • Planting of native tree and hedgerow species selected for their adaptability to changing climatic conditions; • Integration of green infrastructure such as permeable paving, green walls, and pollinator-friendly planting to support ecosystem services;

	• Sustainable drainage systems (SuDS) to manage water quality and quantity; and • Lighting design to reduce disturbance to nocturnal species. • Long-term habitat management, including for the prevention of the introduction and spread of invasive species. • Biodiversity measures listed above and included within the biodiversity chapter align with national and EU climate adaptation strategies, contributing to broader goals such as carbon neutrality, nature-based solutions, and ecosystem-based adaptation. Such strategies include: • CAP25 explicitly supports a transition to a biodiversity-rich, climate-resilient, and environmentally sustainable economy • National Adaptation Framework (NAF) 2025, which identifies biodiversity as a priority sector for climate adaptation, promotes ecosystem-based adaptation and nature-based solutions to address climate risks such as flooding, drought, and habitat loss, and encourages local and sectoral adaptation plans to integrate biodiversity and climate resilience. • EU Adaptation Strategy (2021 Update) which emphasizes nature-based solutions (NbS) as a key cross-cutting priority. Supports ecosystem restoration, urban greening, and coastal protection as climate adaptation tools, and promotes integration of NbS into urban planning, water management, and disaster risk reduction. • EU Biodiversity Strategy 2030 which aims to restore at least 30% of degraded ecosystems by 2030. Recognizes biodiversity as essential for climate mitigation and adaptation, and supports green infrastructure and ecological connectivity to enhance resilience. These measures contribute to carbon sequestration, urban cooling, and ecological connectivity, enhancing the site's resilience to climate change and supporting long-term biodiversity conservation.
Land and Soil	Climate change can affect soil moisture, erosion rates, and land productivity. Increased rainfall may lead to soil erosion, while extended dry periods can degrade soil quality. The Proposed Development includes mitigation measures to manage these risks. Site investigations confirmed that soils across the Proposed Development site are of medium sensitivity and are underlain by tills and brown earths, with no evidence of anthropogenic contamination. Laboratory testing found that concentrations of heavy metals, PAHs, and other substances were below detection limits and within inert waste acceptance criteria. As such, excavation is not required for remediation purposes but is necessary to achieve formation levels for roads, services, and building foundations. The Hydrological and Hydrogeological Risk Assessment Report (DNV, 2025) estimates that approximately 184,442 m³ of soil, stones, clay, and made ground will be excavated to facilitate construction. Where possible, it is intended for suitable soil to be reused onsite, while it is estimated that 103,689 m³ of surplus material will be removed offsite for appropriate reuse,

	recovery, recycling, or disposal in accordance with relevant waste legislation and permitting requirements. To mitigate risks associated with soil disturbance, the Proposed Development includes a suite of soil management measures. These include designated stockpile areas, segregation of reusable and waste materials, sampling before reuse, and controls to prevent pollution from construction materials such as cement or fuels. With these measures in place, residual effects on land, soils, and geology during both construction and operation are assessed as imperceptible and non-significant. The Construction Environmental Management Plan (CEMP) outlines procedures for managing soil stockpiles, preventing dust generation, and controlling runoff, all of which are critical in the context of climate variability. No significant adverse effects are anticipated during the operational phase, and the site will be suitable for long-term residential and commercial use.
Hydrology and Hydrogeology	Climate variability, such as increased rainfall or prolonged droughts, can affect water availability, quality, and management practices. This includes effects on stormwater runoff, flood risk, and water supply. The Hydrology Chapter sets out a detailed water-management strategy, including multi-catchment SuDS with treatment and attenuation sized for 2-, 30-, and 100-year storm events (with a 20% climate-change allowance), petrol interceptors, and compensatory flood-storage measures, ensuring the development does not increase off-site flood risk and that residual hydrological impacts remain imperceptible.
Air Quality	Air quality and climate are interrelated due to shared sources of emissions, particularly from the combustion of fossil fuels during both the demolition/construction and operational phases. These activities generate pollutants that contribute to both local air quality impacts and global climate change. The air quality assessment was undertaken in parallel with the climate assessment to ensure consistency in evaluating emissions and their potential impacts.
Material Assets Waste and Utility	The Proposed Development has been designed in accordance with relevant building design standards, including those governing the provision of electricity, water, gas, and telecommunications. Sustainable power and heat sources have been incorporated into the design to reduce reliance on imported fossil fuels and lower greenhouse gas (GHG) emissions. These design choices represent a direct and indirect interaction with climate and are assessed in this chapter.
Archaeology and Cultural Heritage	Cultural heritage sites are at risk due to climate change, with increased weathering, flooding, and temperature fluctuations potentially accelerating

	their deterioration. Mitigation measures employed at the Proposed Development will ensure that no significant impacts occur.
Traffic	Traffic-related emissions are a key contributor to climate change. The UK Highways Agency's DMRB guidance document LA 114 (2019) outlines criteria for determining whether a detailed climate assessment is required. These include: • A change of more than 10% in Annual Average Daily Traffic (AADT); • A change of more than 10% in the number of heavy-duty vehicles; or • A change in daily average speed of more than 20 km/hr These criteria were applied to both the construction and operational phases of the Proposed Development. For the construction phase, the assessment presented in Chapter 14: Traffic (2025) confirms that peak traffic volumes generated during construction will remain below the 30% uplift threshold defined in IEMA guidance, with all studied links showing increases of less than 20%. With embedded mitigation measures, including haul-route scheduling, access controls, and a Construction Traffic Management Plan, no significant traffic-related effects are anticipated during the construction phase. For the operational phase, traffic modelling undertaken for the EIAR indicates that no road link or junction within the study area will experience a traffic uplift exceeding 10% in the Opening Year (2032) or Design Year (2032), in line with TII protocols. This modelling, which incorporates cumulative impacts from nearby permitted and proposed developments, confirms that the surrounding network will continue to operate effectively and safely. As such, no significant traffic or transport effects are anticipated during the operational phase, and the Proposed Development is expected to integrate sustainably with the existing transport infrastructure. In summary, the Proposed Development's interactions with climate encompass a range of factors including GHG emissions, water resources, biodiversity, soil, human health, and cultural heritage. Effective mitigation strategies and robust monitoring will be essential to address these interactions, minimise adverse effects, and ensure the development's resilience to climate change.
Conclusions	
Mitigation measures employed at the Proposed Development will ensure that no significant impacts occur.	

Table 16-8: Noise and Vibration

Noise and Vibration	
Summary	
Chapter 10 of this EIAR, *Noise and Vibration*, provides a description and assessment of the likely impact of the proposed activities from noise, and sets out appropriate mitigation measures where necessary.	
Interactions	
Population and Human Health	In this EIAR, the Noise and Vibration chapter has been developed in close coordination with the Population and Human Health chapter to assess the potential effects of noise on NSLs. The location of NSLs informed the selection of assessment locations for noise modelling. Predicted noise levels from both the construction and operational phases have been evaluated in terms of their potential effects on human health, including annoyance and disturbance. The integrated approach ensures that the assessment considers, not only technical compliance with noise limits, but also the broader implications for community wellbeing.
Material Assets Traffic	This chapter incorporates data from the traffic consultants to assess the potential noise effects from both construction and operational traffic associated with the Proposed Development. Annual Average Daily Traffic (AADT), vehicle speed and vehicle types (including HGVs) have been considered to calculate the additional noise generated by the Proposed Development, relative to the baseline conditions. Based on the predicted increase in traffic volumes and traffic levels increasing less than 25%, this will likely equate to an increase of noise levels in the range of 1dB(A). This increase is considered negligible, as the lowest decibel change the human ear can discern is 3dB making this increase negligible in terms of magnitude of change.
Conclusions	
Noise associated with the operational plant or machinery will not create any significant adverse impacts beyond the site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development.	

Table 16-9: Landscape and Visual

Landscape and Visual	
Summary	
Chapter 11 of the EIAR, *Landscape and Visual Assessment*, provides a description and assessment of the likely impact of the Proposed Development on the landscape and visual amenities of the area.	
Interactions	
Population and Human Health	The enhanced landscape design contributes positively to local amenity, supporting mental well-being and encouraging outdoor recreation and tourism.
Biodiversity	Proposed landscape planting and green infrastructure can enhance habitat diversity and support ecological connectivity across the site.
Archaeology and Cultural Heritage	There is an impact on landscape but it is consistent with the prevailing planning policy context and sustainable development objectives enunciated in international, national, regional and local policy and the impact can be considered moderate.
Conclusions	
The impact on landscape is consistent with the prevailing planning policy context and sustainable development objectives enunciated in international, national, regional and local policy.	

Table 16-10: Archaeology and Cultural Heritage

Archaeology and Cultural Heritage	
Summary	
Chapter 12 of the EIAR, *Archaeology and Cultural Heritage,* provides information on the known architectural, archaeological, and cultural heritage sites in the study area.	
Interactions	
N/A	No interactions have been identified.
Conclusions	
No interactions have been identified.	

Table 16-11: Material Assets: Waste and Utilities

Material Assets - Waste and Utilities	
Summary	
Chapter 13 of the EIAR, Material Assets: Waste and utilities provide an assessment of the potential impacts of the Proposed Development on Material Assets including built services and infrastructure.	
Interactions	
Population and Human Health	In the absence of mitigation, the improper removal, handling, and storage of waste could have adverse effects on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area, could adversely affect the surrounding human population and their overall health. Chapter 4: Population and Human Health of this EIAR has concluded that no long-term, significant adverse effects are likely to impact Population and Human Health as a result of the Proposed Development.
Land and Soil	Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the site. Potential effects on land and soil are addressed in Chapter 6 of this EIAR.
Hydrology and Hydrogeology	All connections to the public water network (water supply or foul sewer), abstractions from water supply and discharges to the foul sewer during the construction and operational phases will be under consent from Uisce Éireann. Potential effects on water and hydrology are addressed in Chapter 7 of this EIAR.
Climate	The Proposed Development has been designed in accordance with all relevant building design standards. Sustainable power and heat sources have been included as part of the building design to reduce reliance on imported fossil fuels and reduce greenhouse gases (GHG) emissions. Direct and indirect effects of the Proposed Development on climate (for example greenhouse gas emissions) and its vulnerability to climate change are assessed in Chapter 9.
Traffic	The Proposed Development will require the removal of excavated soil and transportation to appropriate waste facilities during the construction phase. It is anticipated that all excavated materials will require removal offsite in accordance with all statutory legislation. It is estimated by the Main Contractor that the Construction Phase of the Proposed Development will involve the excavation of 184,422m3 of soil for the construction of building foundations, drainage and other infrastructure. It is anticipated that all surplus soil arising from groundworks will require off-

	site removal for reuse or recovery in accordance with appropriate statutory consents and approvals. (DNV, 2025) This has the potential to negatively affect the surrounding road network. The removal of all soil from the site will be undertaken in accordance with all applicable statutory legislation and will be the responsibility of the main contractor. Potential effects on traffic are addressed in Chapter 12 of this EIAR. It is expected that the majority of traffic generated by the Proposed Development will be generated during the operation phase through the general movement of residents of the development. (DNV, 2025)
Conclusions	
Potential impacts have been outlined in the respective Chapters specified above. The mitigation measures outlined in the CEMP, and the respective Chapters outlined above, will ensure that there will be no significant adverse impacts on the receiving land, soil and geology associated with the construction phase and the operational phase of the Proposed Development.	

Table 16-12: Material Assets - Traffic

Material Assets - Traffic	
Summary	
Chapter 14 of the EIAR, *Material Assets: Traffic*, provides an assessment of the potential impacts of the Proposed Development on Material Assets including traffic. The design team has engaged collaboratively throughout the design process to ensure that the Proposed Development adopts a sustainable, integrated approach that minimises environmental impacts and optimises multimodal connectivity.	
Interactions	
Population and Human Health	The development will be implemented in accordance with the Preliminary Construction Management Plan (PCMP) to minimise disruption to local residents during construction. During operation, the scheme's high permeability and high-quality pedestrian and cycle facilities will promote active travel, improve access to public transport, and support healthier lifestyles, consistent with Smarter Travel (2009) and the National Sustainable Mobility Policy (2022).
Land and Soil	During construction, any import or export of materials (associated with excavation or infilling works) will result in a minor, short-term increase in HGV traffic. As outlined in the PCMP, appropriate traffic management measures will be implemented to minimise these effects. The overall impact on land and soil-related traffic movements is assessed as temporary, slight, and not significant in EIA terms.
Air Quality	Post-construction, development traffic will contribute marginally to local traffic volumes. Given that no link exceeds a 10% uplift, the resulting impact on air quality is expected to be imperceptible to slight, long-term, and not significant.
Noise & Vibration	During the construction phase, a temporary, short-term increase in noise and vibration levels may occur due to construction traffic. These effects will be slight, adverse, and not significant in EIA terms. The impact of the operational phase on traffic and transport is assessed as neutral to slight, long-term, and not significant.
Conclusions	
With the implementation of all mitigation measures detailed in the respective Chapters, there will be no negative residual impacts upon the Material Assets: Waste and Utilities.	

16.5 Conclusion

While individual environmental factors have been addressed in detail within their respective chapters of this EIAR, their combined and cumulative interactions have also been considered in this chapter to ensure a holistic understanding of potential impacts. Mitigation measures put in place throughout the construction and operation stages of the Proposed Development aim to minimize these interactions.

16.6 References

Chapter 4 Population and Human Health

Chapter 5 Biodiversity

Chapter 6 Land and Soil

Chapter 7 Hydrology and Hydrogeology

Chapter 8 Air Quality

Chapter 9 Climate

Chapter 10 Noise and Vibration

Chapter 11 Landscape and Visual Impact Assessment

Chapter 12 Archaeology and Cultural Heritage

Chapter 13 Material Assets: Waste Management and Utilities

Chapter 14 Material Assets Traffic

17 MITIGATION AND MONITORING

17.1 Introduction

This EIAR has assessed the impacts and resulting effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of particular impacts. These mitigation recommendations are contained within each chapter exploring specific environmental aspects.

This chapter of the EIAR collates and summarises the mitigation comments made in Chapter 4 to Chapter 14

17.2 Competency of the Authors

This chapter has been prepared by Aisling Jones, Environmental Consultant with DNV. Aisling has a Bachelor of Civil Law degree from University College Dublin and a Master of Science degree in Environmental and Climate Law also from University College Dublin. Aisling has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Windfarm Feasibility Studies, Construction Environmental Management Plans (CEMP)s, Interactions, Mitigation and Monitoring, Material Assets (Waste and Utilities) Chapters of Environmental Impact Assessment Reports (EIAR)s.

This report was reviewed by Grainne Ryan, Principal EIA Consultant at DNV. Gráinne is an Environmental Consultant with over 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Gráinne has a B.A, in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

17.3 Summary of Mitigation Measures

17.3.1 Population and Human Health

17.3.1.1 Construction Phase

Mitigation

No specific mitigation measures are required during the construction phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

Monitoring

No specific monitoring measures are required during the construction phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

17.3.1.2 Operational Phase

Mitigation

No specific mitigation measures are required during the operational phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

Monitoring

No specific monitoring measures are required during the operational phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

17.3.2 Biodiversity

17.3.2.1 Construction Phase

Mitigation

Mitigation Measures for Habitats during Construction Stage

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b), as follows:

- All trees along the proposed development boundary that are to be retained, both within and adjacent to the proposed development boundary (where the root protection area of the tree extends into the proposed development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree.

- The RPA will be defined based upon the recommendation of a qualified arborist
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10 m of any retained trees, hedgerows and treelines
- A qualified arborist shall assess the condition of, and advise on any repair works necessary to, any trees which are to be retained or that lie outside of the proposed development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist
- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged

In the case of the marsh habitat on site, it is not practical to retain the marsh habitat in its current location owing to changes in the ground levels to address site accessibility requirements. Therefore, it is instead proposed to translocate the habitat (comprising approximately 0.05 ha) to another location within the proposed development site. The proposed translocation approach is based on a review of case studies and is considered to be a pragmatic and feasible solution in light of design constraints and has been developed through a multidisciplinary iterative design approach with input from the design team's engineers, hydrogeologist, landscape design team and ecologists. The area identified for habitat translocation and creation is to provide a greater area (0.13 ha) to that being permanently lost to the proposed development. A replacement ratio greater than one-to-one is used in this instance because of the uncertainty inherent in habitat compensation and translocation.[1] This is detailed in the accompanying Marsh Translocation Report (Gannon & Associates, 2025).

Prior to works commencing, a detailed Ecology Site Management Plan specific to the contract programme will be prepared by a suitably qualified ecologist with reference to the construction programme. This may influence the timing and co-ordination of these works and the requirement for storage of soils. The management plan will be issued to the site contractor and team involved in the translocation works and will include a site-specific method statement outlining step-by-step actions for the site contractor to implement within a specified timescale, under the supervision and advice of the ecologist. It will also include a checklist of conditions to be assessed by the ecologist at the receptor site during ecological monitoring to be carried out prior to, during and post translocation works. The requirement for an Ecology Site Management Plan by the Contractor does not reflect any current inadequacy in the information presented here and relied upon in the EIA Report; rather the management plan to be prepared

[1] CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine V1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

will merely serve to provide more site-specific detail and methodological steps to the principles and proposals already outlined in this report.

Engineering solutions will be implemented as required to complement the site's existing hydrological and hydrogeological regime to create an appropriate degree of waterlogging at the receptor site to allow for habitat establishment and long-term persistence on site. These solutions will include diversion of subsurface drains into the receptor site area and/or creating areas of low elevation or depressions that can be flooded and retain water and/or excavating to the depth of the seasonal water-table[2]. The receptor site will be prepared in conjunction with any required engineering solutions through the removal of surface vegetation and the creation of suitable hollows/depressions to receive the translocated vegetation.

Once the receptor site has been suitably prepared, translocation involves the removal of turves, soil and/or plant species from the impacted donor site to the new receptor site. Turves of habitat will be carefully removed from the chosen donor site using a suitable excavator (*i.e.* with adequate capacity to carefully remove the intact turve). The excavated turves will be temporarily stored in standing water. Some of the underlying soils will then be excavated and used to line the receptor site hollow. Due to the wetness of soils associated with the habitat, it is recommended that, where possible, they are translocated immediately from the donor site to the receptor site. In the event of this not being possible, the duration of storage should be minimal. Soil translocation is useful to introduce chemically and physically suitable substrate for growth of target plant species, as well as a mixture of soil organisms such as bacteria, fungi and invertebrates, and a mixture of wetland vegetation (as seeds, tubers or rhizomes).[3] The turves should be translocated into the receptor site in early spring, at the end of dormancy, just before full growth.

In addition to turves excavated from the existing marsh habitat, supplemental landscape planting on and around the translocated turves of suitable species reflecting those recorded on site and typical of marsh may be implemented during the establishment phase as monitoring identifies gaps where the translocated vegetation may be locally slow to establish. Species that may be used would include those typical of a marsh habitat and is detailed in Marsh Translocation Report. Many of these species have been proposed to be utilised in the ongoing SDCC ICW projects, such as at Tymon Park[4].

In compensating for the losses of these habitat types, the proposed development is not likely to result in a significant residual effect, at any geographic scale, on marsh (GM1).

Prevention of spread of invasive species during construction

Any Third schedule invasive species (*Allium triquetrum* and *Hyacinthoides hispanica*) must be removed from the proposed development site in advance of construction works.

[2] Gilbert, O.L., and Anderson, P. (1998) *Habitat Creation and Repair.* Oxford University Press.
[3] Taylor N.G., Grillas P., Smith R.K. & Sutherland W.J. (2021) *Marsh and Swamp Conservation: Global Evidence for the Effects of Interventions to Conserve Marsh and Swamp Vegetation*. Conservation Evidence Series Synopses. University of Cambridge, Cambridge, UK.

[4] Nicholas O'Dwyer Ltd. (2019) River Poddle Flood Alleviation Scheme, Volume 4 EIAR: Appendix 5-3 Integrated Constructed Wetland Report.

- A confirmatory pre-construction invasive species survey will be undertaken by an ecologist, arranged by the appointed contractor/client to confirm the absence, presence and / or extent of all Third Schedule non-native invasive species within the footprint of the proposed development site

- During advance works and prior to commencement of construction, any areas where Third Schedule non-native invasive species have been recorded must be clearly fenced off (in order to avoid spreading seeds or plant fragments around or from the site) prior to their excavation and removal off-site to a licenced facility for invasive species by an appointed invasive species management (ISM) contractor which shall be completed prior to the commencement of construction works. Earthworks or machinery movement must be avoided in any areas where non-native invasive species have been identified during the pre-construction surveys, until the relevant stands have been eradicated, by the ISM contractor and/or under the supervision of the ISM contractor.

- All equipment and machinery will be cleaned prior to entry into the proposed development site as biosecurity measures to avoid transfer of invasive species on equipment and machinery which may have been used elsewhere.

- Erection of clear signage will be undertaken at the construction compound (and any discrete construction areas) and inclusion of detail during toolbox talks or similar (environmental induction) for construction staff in respect of the management of Third Schedule non-native invasive species. The signage and notification should be easily understood so that users are aware of the measures to be taken for the locations of non-native invasive species on site

- In consultation with the ISM contractor, identify dedicated access points into and out of fenced off areas. These shall not be breached until such time that the ISM contractor, 1) has confirmed eradication / removal of non-native invasive species, or 2) is present to supervise works to commence the treatment / eradication process;

- Where possible, the locations of dedicated footwear and wheel wash facilities should be identified and updated by the ISM contractor. Where a dedicated / bespoke wheel wash cannot be installed owing to space limitations, the ISM contractor shall, in conjunction with the appointed contractor, ensure that no excavated loose material is allowed offsite from within an exclusion zone. Similarly, where plant that is used to excavate soils, it shall be visually checked for loose soil before movement to another part of site (where possible, the movements of tracked machinery should remain outside the non-native invasive species exclusion zone as defined by the ISM contractor or strictly supervised by the ISM contractor where unavoidable). Loose soil shall be scraped off and the material double-bagged and brought to a clearly demarcated and dedicated quarantine area for disposal to an authorised facility, and a solution of Virkon© (or similar approved disinfectant) applied to machinery to ensure that no obscured seed/root material remains viable.

- Vehicular movements within any exclusion area shall be minimised as far as is practical.

- Machinery which has been used for the transport and / or excavation of infected / suspected infected vector material shall be thoroughly washed down, and the washings captured in a quarantined bunded container for disposal. All such machinery / plant shall not be permitted to commence work elsewhere on or off-site until written confirmation of clearance of vector material has been undertaken.;

- Dedicated wash down and solution capture should be set up in the construction compound. All washings should be stored in a quarantined bunded container that is rated for such storage until such time that they are removed offsite for disposal and a facility that is authorised to accept such waste;

- Except in very particular circumstances, under the guidance of the ISM contractor, there shall be no temporary storage of infected / suspected infected soils on-site;

- Where small volumes e.g., volume capable of being double bagged in quarantine bags such as cut plants, bulbs or loose soil occur, it may be practical to bag and/or containerise the material and bring it to a clearly demarcated and dedicated quarantine area within the construction compound until such time that the material is disposed of to an authorised facility, similar to the process of disposing of bulk excavated infected soil. The temporary storage of small amounts of infected material shall not occur within 50m of any watercourse and any land within an identified flood zone.

- Where the movement of any Third Schedule species is required off-site, a licence will be required from NPWS under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) in advance of any movement to a site/facility licenced to accept such waste.

- In the case of *Allium triquetrum* and *Hyacinthoides hispanica* within the proposed development site, eradication of infestations can be achieved through physical removal. Hand digging of individuals should be carried out when above-ground biomass is visible (i.e. early spring) ensuring that all biomass including bulbs collected.

Protection of Vegetation from Dust during Construction

To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis.

Protection of water quality

Mitigation measures to protect surface water in the receiving environment during construction are described in Chapter 7 of this EIAR, and in the project CEMP, and include the following:

- A riparian buffer zone of 20 metres will be maintained at all waterbodies. Entry to the stream channel by vehicles and/or personnel will not be permitted under normal circumstances. Works will be carried out from the bank side. Where instream works are

proposed however, they will be restricted to the period 1st July through 30th September, inclusive to minimise the risks to any salmonids downstream,

- Road stream crossings will be box culverts in design due to the associated site constraints (i.e. the presence of trunk watermains at the location of the proposed crossings and the requirement for the achievement of greater than minimum vertical separation), the requirement to tie into existing roads, and the narrow width of the watercourse on site. Embedded culverts will be buried to a depth of 500mm below the stream bed at the natural gradient and will be back filled with clean gravel to match the existing stream profile. The culvert will be sized to maintain the natural channel width. The stream crossings will be implemented as per a method statement agreed by the appointed contractor and IFI,
- There will be no direct discharges to surface waters during the construction phase,
- Prior to any machinery working on site for any purpose, the working area will be marked out with wooden stakes and where deemed necessary, hazard tape will be erected to identify the working limits,
- Provision of measures to prevent the release of sediment during the construction work will be installed prior to any site clearance. In respect to works adjacent to the drainage ditches and streams with flowing water, these measures may include but not be limited to the use of silt fences, sedimentation mats etc.,
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the receiving water environment,
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence,
- Working limits to be checked at the end of every day by the Site Manager
- If pouring of cementitious materials is required for the works adjacent to a pond, surface water drainage features, or drainage features connected to same, this will be carried out during dry weather
- Discharge water generated during placement of concrete will be removed off site for treatment and disposal
- Where stockpiling is required, temporary stockpiles will be located >20 metres from any water features. Three sides will be surrounded with silt fences with access from the fourth (uphill) side. Sides will be smoothened and collection of run-off considered i.e. discharging to a settlement pond etc.
- The contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly
- Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. Concrete washout areas will be located remote from any surface water drainage features to avoid accidental discharge to watercourses
- No storage of hydrocarbons or any polluting chemicals will occur within 50m of the surface water network. Fuel storage tanks will be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Re-fuelling of plant will not occur within 50m of the surface water network and only in bunded refuelling areas

- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste
- If any heavily contaminated land is encountered during construction, it will be removed off-site and be disposed of at a licenced waste facility
- Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters will be treated using best practice, appropriate measures/controls dependent on the nature of the contamination prior to discharge to the surface water network
- There will be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time
- Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses
- An Emergency Response Plan detailing the procedures to be undertaken in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident will be prepared
- Ensure site staff are trained in the implementation of the Emergency Response Plan and the use of any spill control equipment as necessary
- The contractor will employ an environmental specialist who will monitor water quality upstream and downstream of the area of works. Data on pH, conductivity, and suspended solids will be collected as follows:
    - Twice weekly visits during general site works
    - Daily site visits during key construction activities (to be agreed between the environmental specialist and South Dublin County Council), e.g. during installation of the proposed outfall, during and immediately after clearance of on-site vegetation.
    - Event inspection e.g. following heavy rainfall events or during concreting works
- Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations should be agreed at commencement and based on the baseline established in the two months prior to works commencing. Note: Additional measures will be implemented in the event that threshold concentrations are surpassed
- All monitoring data should be collated to show trends for indicator parameters pH, conductivity, suspended solids and hydrocarbons, and will be shared at regular intervals with South Dublin County Council.

These mitigation measures are for the protection of the water quality within the Corbally, Coldwater, and Cooldown streams only, and not for the protection of European Sites downstream as there are no significant effects likely to arise on European sites as a result of water quality impacts associated with the proposed development, as discussed above in Section 6.1.

<u>Mitigation Measures for Badgers during Construction Stage</u>

The mitigation measures described below follow the recommendations set out in the Guidelines for the Treatment of badgers during the Construction of National Road Schemes (National Roads Authority, 2006). These guidelines set out the best practice approach in considering and mitigating impacts on badgers during construction works.

As badger could potentially establish new setts in the future within the ZoI of the proposed development, a pre-construction check of all suitable habitat within the proposed development boundary will be required within 12 months of any constructions works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:

- Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage
- No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances
- During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts
- Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist

As the proposed development will not result in the permanent loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.

Mitigation Measures for Otter During Construction Stage

The mitigation measures as described above in Section 5.9.1.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on otter species.

Mitigation for Birds during Construction Stage

Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

Mitigation for Amphibians during Construction Stage

Disturbance and Mortality Risk

If works to clear any of the habitat features suitable to support amphibian species are to begin during the season where frogspawn or tadpoles may be present (February – mid-summer), or

where breeding adult newts, their eggs or larvae may be present (mid-March – September), a pre-construction survey will be undertaken to determine whether breeding amphibians are present.

In the case of common frog, any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat by hand net and translocated to the nearest area of available suitable habitat beyond the ZoI of the proposed development by a suitably licensed individual.

In the case of smooth newt, individuals will be captured and removed from affected habitat either by hand net or by trapping and translocated to the nearest area of available suitable habitat, beyond the ZoI of the proposed development by a suitably licensed individual. If used, the type and design of traps shall be approved by the NPWS. This is a standard and proven method of catching and translocating smooth nest.

If the size or depth of the habitat feature is such that it cannot be determined whether all amphibians have been captured, it will be drained under the supervision of a suitably experienced ecologist to confirm that no amphibian species remain before it is destroyed or infilled. Any mechanical pumps used to drain the habitat feature will have a screen fitted, and be sited, such that no amphibian species can be sucked into the pump mechanism.

Any capture and translocation works shall be undertaken immediately in advance of site clearance/construction works commencing.

Protection of Water Quality

The mitigation measures as described above in Section 5.6.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on amphibians.

Mitigation Measures for White-clawed crayfish during construction stage

The mitigation measures as described above in Chapter 5 Section 5.6.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on white-clawed crayfish.

Mitigation Measures for bats during Construction Stage

Measures to Protect Bats during the Removal of Roosts

The following mitigation measures are proposed in relation to trees identified as having potential to support roosting bats (Chapter 5, Figure 5-8). Bats could occupy suitable roosting features at any time prior to the commencement of works. Therefore, there is an inherent risk that bats could be affected by the proposed felling works. The following mitigation procedures will be followed:

- Where possible, felling of confirmed or high suitability potential tree roosts will be undertaken during the periods April – May or September – October as during this period bats are capable of flight and may avoid the risks from tree felling if proper measures are undertaken, but also are neither breeding nor in hibernation. Pre-felling checks of potential roost features to determine if bats are present.

- In advance of felling, a bat emergence survey should be undertaken to confirm absence of roosting bats on the night immediately preceding the feeling operation to determine if bats are present. Use of detectors alone may not be sufficient to record bat emergence and re-entry in darkness. Therefore, the emergence survey will be carried out using infra-red illumination and video camera(s) and bat detectors.

- Where it is safe and appropriate to do so for both bats and humans, such trees may be felled using heavy plant to push over the tree. In order to ensure the optimum warning for any roosting bats that may still be present, the tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist

- Trees should only be felled “in section” where the sections can be rigged to avoid sudden movements or jarring of the sections

- Where remedial works (e.g. pruning of limbs) is to be undertaken to trees deemed to be suitable for bats, the affected sections of the tree will be checked by a bat specialist (using endoscope under a separate derogation licence held by that individual) for potential roost features before removal. For limbs containing potential roost features high in the tree canopy, this will necessitate the rigging and lowering of the limb to the ground (with the potential roost feature intact) for inspection by the bat specialist before it is cut up or mulched. If bats are found to be present, they will be removed by a bat specialist licenced to handle bats and released in the area in the evening following capture

- If any bat tree roosts are confirmed, and will be removed by the proposed felling works, then a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes.

Measures to Control and Reduce Light Spill During Construction

During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site shall be sensitive to the presence of bats in the area, downlighting, and time limited where possible. Lighting of sensitive wildlife areas and primary ecological corridors (e.g. along the central hedgerow/watercourse, and hedgerow boundaries of the site) and light pollution in general should be avoided.

Lighting of the site during construction is designed in accordance with the following guidance:

- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020)
- Guidance Note Bats and Artificial Lighting at Night GN08 (Institute of Lighting Professionals, 2023)
- Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

Monitoring

A suitably experienced and qualified Ecological Clerk of Works (ECoW) will be retained by the appointed contractor. The ECoW will advise the appointed contractor on ecological matters during construction, undertake preconstruction surveys as necessary, communicate all findings in a timely manner to the appointed contractor and statutory authorities, acquire any licenses / consents required to conduct the work, and supervise and direct the ecological measures associated with the Proposed Scheme. Pre-construction surveys for PRFs, invasive species, amphibians, breeding birds and badger will be carried out as described in the respective sections above.

17.3.2.2 Operational Phase

Mitigation

Mitigation measures for habitat loss

The landscaping plan for the proposed development site includes for the replacement planting of hedgerows and trees throughout the site of native species to compensate for the loss of hedgerow within the site. In the case of the central hedgerow along the Cooldown watercourse, 186 linear metres of hedgerow habitat is to be lost across six separate sections. The landscape planting schedule will include for the planting of an additional 2070 m^2 of hedgerow habitat with 280 trees, thereby mitigating the loss of this habitat. While there will be some habitat loss in the short term during the construction phase of the proposed development, the planting schedule will result in an overall net gain for hedgerow habitat, and therefore the proposed development is not likely to result in a significant residual effect on these habitats, at any geographic scale.

Prevention of spread of invasive species during operation

The bulk importation of material from offsite could potentially result in the accidental spread of Third Schedule species, as it is uncertain if these site(s) are free from non-native invasive species. This is likely less an issue for road building material. However, in terms of landscaping, if soil is imported to the site for landscaping, infilling or embankments, the appointed contractor shall seek documentation from suppliers confirming that the material is free from invasive species.

Following the construction of the proposed development, there may be ongoing treatment programmes which extend for a number of years into the operational phase. Notwithstanding this fact, it is important that the proposed development site is systematically re-surveyed during its early operational phase, particularly around areas where management / eradication measures were enacted, to determine the success of control measures and to identify areas where invasive plants may be reinvading. This post-construction surveillance should be carried out for at least two years post completion (or as advised by the ISM contractor of all mitigation measures).

The above measures are important for all Third Schedule species, where they occur, as maintenance works associated with landscaping, such as mowing and hedge cutting have the potential to spread these species via the dispersal of very small amounts of plant material.

Mitigation Measures for Bats during Operation Stage

Any light spill affecting bat use of habitats outside of the proposed development boundary will be minimised, particularly along the boundaries of the site, and along the central boundary. Light levels during construction and operation in these areas will be maintained as close to baseline levels as is practicable.

Ecological input was provided to the lighting design, to ensure the sensitive siting and design of the lighting elements with respect to bats. This includes careful consideration of light placement on buildings, column heights and luminaire design. Luminaires have been selected which do not emit UV light (e.g. metal halide and fluorescent light sources have been avoided), and which are designed using full cut off. These will be mounted horizontally, with no tilt, to ensure there is no direct upward light.

Through the implementation of sensitive lighting design and the use of forward throw luminaires, lux levels on the eastern, western, and central hedgerows (with the exception of road/footpath crossing points) has been kept at or below 1.0 lumen.

Monitoring

It is recommended that post installation monitoring of any bat boxes that need to be installed as part of the mitigation measures outlined in Section 5.6.1 is carried out to determine the efficacy of this measure. These checks will be undertaken in years 1, 3 and 5 post construction with a memo provided to the client following each check.

It is recommended that post-construction monitoring for invasive species should be carried out for at least two years post completion, as outlined above.

It is recommended that monitoring of petrol interceptors installed as part of the SuDS features should be regularly inspected, cleaned, and professionally serviced to prevent pollution to the downstream environment.

Monitoring of the receptor site for Marsh habitat will be carried out by a suitably qualified and experienced ecologist pre-compensation, during and post-compensation as described in Marsh Translocation Report in order to:

- Ensure that potential issues that may deter the success of the compensation are identified at an early stage and addressed through adaptive management measures; and
- Determine the overall success of the habitat compensation.

Adaptive management measures will be targeted to address the specific issues identified by the monitoring and may be varied. For example, they could include translocation of additional turves to replace those that have failed, and/or additional seeding where this is deemed necessary to improve vegetation cover/presence.

This area of habitat should be monitored in years 1, 3 and 5 post-construction by a suitably qualified and experienced ecologist to monitor habitat quality, species richness, as well as potential scrub encroachment and invasive species spread/colonisation.

17.3.3 Land and Soils

17.3.3.1 Construction Phase

Mitigation

During the construction phase, all works will be undertaken in accordance with the Construction Environmental Management Plan (CEMP) (DNV, 2025a; submitted with the planning application under separate cover) and the Resource and Waste Management Plan (RWMP) (DNV, 2025b; submitted with the planning application under separate cover). Following appointment, the contractor will be required to further develop the CEMP and RWMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The CEMP and RWMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place during the construction phase of the Proposed Development.

Import of Soil, Subsoil and Aggregate Materials

Contract and procurement procedures will ensure that all imported soil, subsoil, and aggregate materials required for the construction phase of the Proposed Development are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity standards, statutory obligations, and the relevant provisions of the RWMP (DNV, 2025b). Where applicable, the importation of soil and stone from other developments will be carried out in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011, ensuring that such materials are not considered waste and are suitable for beneficial use.

All imported materials will be subject to robust management and control procedures, including testing for contaminants, invasive species, and other anthropogenic inclusions, and assessment of their suitability for use in accordance with the engineering and environmental specifications for the Proposed Development. As a result, any unsuitable material will be identified prior to unloading or placement on site, thereby ensuring environmental protection and compliance with regulatory requirements.

Airborne Dust Generation

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through the selection of adequate mitigation techniques and effective management. The most effective technique is to control dust at source and prevent it from becoming air borne by implementing the following mitigation measures:

- Excavated soils will be carefully managed and maintained to minimise potential effect on soil quality and soil structure.
- Handling of soils and materials will be undertaken in accordance with documented procedures outlined in the CEMP and RWMP that will be set out in order to protect ground and minimise airborne dust.
- The normal measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This may require additional wetting at

the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the site.

- Vehicles travelling on any unsurfaced site roads will have their speed restricted to 20 kph.
- Footpaths immediately around the site will be cleaned by hand regularly, with damping as necessary.
- High level walkways and surfaces such as scaffolding will be cleaned regularly using safe 'wet' methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
- Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods as necessary.
- Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed
- Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions, utilising the methods highlighted above. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes which are envisaged.
- The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The name and contact details of a person to contact regarding air quality and dust issues will be displayed on the site boundary, this notice board will also include head/regional office contact details.

Potential effects and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8 of this EIAR.

Reuse of Soil

Soil and subsoil materials to be reused within the Proposed Development (i.e., for engineering fill and landscaping) will be subject to assessment of suitability for use in accordance with engineering and environmental specification for the Proposed Development. This will include:

- Defining the criteria by which the suitability of the soils for reuse will be assessed (e.g., analytical parameters and limits, the engineering requirements such as geotechnical parameters for the material to be used within the works).
- Delineation of areas where excavated soil is intended for disposal offsite as waste, and where it is intended for reuse onsite.
- Identification and recording of the location from where the soil will be excavated and its proposed reuse location and function.
- Engineering assessment to confirm its suitability for reuse.
- Any proposed treatment or processing required to enable its reuse, as well as any associated treatment permits, or licences required.

Management and Control of Soils and Stockpiles

Segregation and storage of soils for re-use onsite or removal offsite and waste for disposal offsite will be segregated and temporarily stored onsite pending removal or for reuse onsite in

accordance with the CEMP (DNV, 2025a) which will be updated by the main contractor in advance of construction works commencing.

Where possible, stockpiling of soil and stone onsite will be avoided. However, in the event that stockpiling is required, stockpiled materials, pending reuse onsite, will be located away from the location of any sensitive receptors (i.e., watercourses). In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open water where sufficient working areas are available within the site boundary.

When a stockpile has been sampled for re-use or waste classification purposes, it will be considered to be complete, and no more soil will be added to that stockpile prior to removal. An excavation/stockpile register will be maintained on-site.

The reuse of suitable excavated soil and subsoil for the Proposed Development (i.e., landscaping or engineering) will be undertaken in accordance with the engineered design and landscape plan for the Proposed Development. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse or awaiting reuse onsite, will be segregated, and stockpiled appropriately in accordance with the measures outlined in the CEMP (DNV, 2025a). To minimise the overall effect on soils arising during the construction works, the following mitigation measures will be adhered to.

- A designated temporary storage area will be identified and clearly marked on site.
- All stockpiles will be assigned a unique stockpile identification number for traceability.
- Materials will be segregated by type and destination, including those identified for reuse on site, reuse off site, and waste. All segregation, storage, and stockpiling locations will be clearly delineated on site drawings.
- Soil stockpiles will be covered to prevent surface water run-off and the generation of windblown dust.
- Topsoil will not be stored in piles exceeding 2 metres in height to prevent degradation of the soil structure. It will be kept as dry as practicable and reused as soon as possible to minimise deterioration from prolonged storage or excessive handling.
- Any waste materials temporarily stored or stockpiled will be placed on impermeable surfaces, such as high-grade polythene sheeting, hardstand areas, or in skips, to prevent cross-contamination with underlying soils or other materials.
- Regular watering will be undertaken to maintain adequate moisture content in exposed soils, enhancing stability and suppressing dust emissions.
- Stockpile volumes will be kept to a minimum and, where feasible, located away from sensitive receptors such as residential areas.
- Where necessary, stockpiles will be sheeted or dampened to further control dust and erosion.
- Earthworks and excavations will be kept damp where necessary and reasonably practicable, particularly during dry or windy conditions.
- All stockpiles will be located a minimum of 20 metres from any watercourse to reduce the risk of sediment run-off and protect surface water quality.

All surplus materials and any waste generated from construction activities will be stored onsite in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required).

- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent reuse, recycling and recovery.
- Prevent hazards to site workers and the general public during the construction phase (largely noise, vibration and dust).

Soil Structure

To mitigate potential impacts on soil structure during construction, the following measures will be implemented:

- The extent of the required work area and the bulk excavation footprint will be minimised where practicable to avoid unnecessary disturbance of soil. This includes reducing tracking over undisturbed soil and subsoil outside designated excavation zones, thereby limiting compaction and rutting from construction traffic.
- Topsoil and subsoil will be segregated and stored separately in accordance with best practice to preserve their structure and quality, ensuring suitability for reuse on site.
- Disturbed subsoil layers will be stabilised as soon as practicable, through activities such as backfilling of service trenches, construction of road capping layers, building foundations, and landscaping. The duration of exposure of subsoil will be minimised to reduce the risk of degradation from weathering (e.g. drying, erosion, or waterlogging).
- Stockpiles of excavated soil and subsoil will be protected for the duration of the works and strategically located to minimise double handling. Topsoil and subsoil stockpiles will be clearly separated and identified.

These measures are designed to maintain the physical integrity, fertility, and drainage characteristics of the soil, supporting its reuse and minimising environmental impact in line with good construction and environmental management practices.

Export of Resource (Soil and Subsoil) and Waste

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) and will be managed in accordance with all legal obligations.

It will be the contractor's responsibility to either; obtain a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations for the collection and movement of waste offsite.

Where appropriate, excavated soil and material intended for recovery or disposal offsite will require appropriate waste classification in order to select an appropriate receiving facility. Assessment of the excavated material will be carried out with due regard to the following guidance and legislation:

- Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous.
- EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002).
- Environmental Protection Agency documented entitled Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.
- Environment Agency, 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste.

- Any other guidance or legislation that might be applicable or relevant at the time of disposal.

The re-use of soil and subsoil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

Any surplus material not suitable for re-use as a by-product and other waste materials arising from the construction phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Any waste soils will be transported under a valid waste collection permit issued under the Waste Management (Collection Permit) Regulations 2007, as amended and will be delivered to an appropriately authorised waste management facility.

Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain including photographs as appropriate.

Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept onsite. Waste collection permits for registered hauliers and certs of registration/ licenses/permits for authorised waste facilities will be kept on file at the head office.

All site personnel and sub-contractors will be instructed about the objectives of the CDWMP and informed of their responsibilities as a consequence of its provisions.

Vehicles transporting material with potential for dust emissions to an offsite location shall be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.

Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. The main contractor will carry out road sweeping operations, employing a suction sweeper or similar appropriate method, to remove any project related dirt and/or material deposited on the road by construction/ delivery vehicles. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

Concrete Works

The use of cementitious grout during the construction phase of the Proposed Development will be managed to avoid any risk of ground contamination, through the implementation of appropriate design measures and construction methods by the appointed contractor, in accordance with the CEMP (DNV, 2025a) and relevant industry standards.

The following mitigation measures will be adhered to when using concrete and cement-based materials:

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.

- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

Weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

Handling of Fuels, Chemicals and Materials

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DNV, 2025a), in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite) and contained within constructed impermeable and bunded areas.

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas. These areas will be located within a designated area placed furthest away from adjacent watercourses / drains and contained within constructed bunded areas

Bunds will have regard to current best practice for oil storage (Enterprise Ireland, BPGCS005) and Environmental Protection Agency guidelines ‘Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities’ (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Environmentally friendly materials will be used during the construction process including the use of biodegradable lubricants and hydraulic fluids for machinery and equipment.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised onsite is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed offsite.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times

The appointed contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.

Spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for

use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit

Emergency Procedures

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements. The following mitigation measures will be adhered to as follows:

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Proposed Development site and compliantly disposed of offsite. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff onsite will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geology associated with the construction stage of the Proposed Development.

Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by an appropriately authorised contractor.

Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by Uisce Eireann (UE).

Monitoring

During the Construction Phase of the Proposed Development, the following monitoring measures will be implemented where appropriate:

- Routine inspections of construction activities will be carried out daily by the contractor staff to ensure all controls to prevent environmental effect, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure

that the works are undertaken in compliance with the CEMP (DNV, 2025a) and that the requirements of the Grant of Planning and associated documentation are being adhered to during construction.

- Routine monitoring and inspections during refuelling and concrete works to ensure no adverse effects and compliance with avoidance, remedial and mitigation measures.
- The excavation and reuse of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for onsite use in accordance with engineering and environmental specification for the Proposed Development that will be determined during the detailed design phase.
- Where the material is not suitable for re-use and considered a waste, additional sampling and assessment of soil and materials may be required to ensure that the materials are managed and removed offsite in accordance with waste management legislation. The waste classification of sample results will be based on the following method:
    - Soil sample collection and analysis in accordance with relevant industry standards including but not limited to:
        - EPA guidance document 'List of Waste & Determining if Waste is Hazardous or Non-hazardous and Waste Classification' (EPA, 2018); and
        - BS 10175:2011 Investigation of potentially contaminated sites - Code of practice (BSI, 2011).
    - Assessment of results to determine if the sample is a hazardous or non-hazardous waste and assigning a List of Waste (LoW) Code to the sampled material in accordance with EPA guidance 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (EPA, 2018).
    - The material will also be assessed to determine if the material meets the waste acceptance criteria for authorised landfills and soil recovery facilities as follows:
        - Screening the sample analytical results against the waste acceptance criteria (Landfill WAC) set out in the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002); and
        - Screening the sample analytical results against the Maximum Concentrations and/or Soil Trigger Levels set out in the Environmental Protection Agency (2020) "Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities" (SRF WAC).
- The appointed contractor will monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations which will be undertaken in advance of construction works commencing.
- A dust deposition monitoring programme will be implemented during the construction phase in order to verify the continued compliance with relevant standards and limits. Where required, the appointed contractor will undertake dust monitoring at a range of nearest sensitive receptors during the construction phase of the Proposed Development with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m^2/day, averaged over one year and applied as a 30-day average.
- Materials management and waste audits will be carried out at regular intervals to monitor the following:
    - Management of soils onsite and for removal offsite.
    - Record keeping.
    - Traceability of all materials, surplus soil and other waste removed from the site.

- Ensure records are maintained of material acceptance at the end destination

17.3.3.2 Operational Phase

Mitigation

Taking account of the design of the Proposed Development, it is concluded that there will be no likely significant effects on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive. Therefore, there is no requirement for mitigation measures for the operational phase.

Monitoring

There are no monitoring requirements specifically in relation to land, soil and geology during the operational phase of the Proposed Development

17.3.4 Hydrology

17.3.4.1 Construction Phase

Mitigation

A Construction Environmental Management Plan (CEMP) has been prepared by DVN (DNV, 2025a; submitted with the planning application under separate cover). The CEMP will address construction environmental management during the construction phase of the Proposed Development. Following appointment, the contractor will be required to further develop the CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001).

The CEMP will take cognisance of measures outlined in the EIAR and will be implemented for the duration of the construction phase, covering construction management activities that will take place during the construction phase of the Proposed Development.

Mitigation works will be adopted as part of the construction works for the Proposed Development. The measures will address the main activities of potential impact which include:

- Control and management of water and surface runoff.
- Control and management of shallow groundwater during excavation and dewatering
- Management and control of soil and materials.
- Control of management of in-stream or near stream works.
- Control of management of materials from off-site sources.
- Control and management of piling.
- Appropriate fuel and chemical handling, transport and storage.
- Management of accidental release of contaminants at the site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice. Good construction management practices will minimise the risk of pollution from construction activities at the subject site including but not limited to:

- Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA, 2015. Environmental Good Practice on Site (C741).
- Enterprise Ireland Oil Storage Guidelines (BPGCS005).
- Environmental Protection Agency (EPA), 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.
- CIRIA, 2007. The SuDS Manual (C697).
- UK Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG).
- CIRIA, 2006. Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648).
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

Control and Management of Instream Works and Works Adjoining Watercourses

All open waterbodies at the site including the Corbally, Coldwater, and Cooldown will be protected for the duration of the works.

A 20m buffer will be retained at all open waterbodies. Site traffic will only be permitted within this buffer to facilitate instream and near stream works for the construction of the proposed headwalls to receiving waterbodies (i.e., Corbally, Coldwater, And Cooldown Streams), overflow to the Translocated Marshland Area and bridge crossings to facilitate vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

Buffer zones will be established by erecting a silt fencing or bunding along the length of the open waterbodies (i.e., Corbally Stream, Coldwater Stream, and Cooldown Stream) with cognisance to Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016). Silt fencing will comprise wooden posts and double walled geotextile membrane buried in an ‘L’ shape to a minimum depth of 250mm. The silt fencing will act in filtering any potential surface water run-off from the site generated during the proposed works and will be retained in place for the duration of the construction phase until the development is complete. Heras fencing will be installed in front of the silt fencing at the Site to prevent “Site creep”, the progressive movement of site activities towards this silt fence. The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how this silt curtain is to be installed and maintained throughout the construction phase.

The silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the Environmental Manager. The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of the open waterbodies and during and after storm events. Weekly or bi-weekly checks may be appropriate at other times.

All instream works or works carried out in or adjacent to the the Corbally, Coldwater, and Cooldown Streams will adhere to the Inland Fisheries Ireland (IFI) Guidelines on Protection of

Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016), the Transport Infrastructure Ireland (TII) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008) and CIRIA C648 Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

All instream works will include the following measures:

- Road stream crossings will be box culverts in design due to the associated site constraints (i.e., the presence of trunk watermains at the location of the proposed crossings and the requirement for the achievement of greater than minimum vertical separation), the requirement to tie into existing roads, and the narrow width of the watercourse on site. Embedded culverts will be buried to a depth of 500mm below the stream bed at the natural gradient, and will be back filled with clean gravel to match the existing stream profile. The culvert will be sized to maintain the natural channel width. The stream crossings will be implemented as per a method statement developed by the appointed contractor in advance of construction works commencing and agreed with IFI as required.
- All works for the proposed translocation will be undertaken in accordance with the method statement prepared by Gannon & Associates Landscape Architecture (Gannon & Associates Landscape Architecture, 2025. Marsh Translocation Report; submitted with the planning application under separate cover). These works will be undertaken in advance of other construction works commencing and the contractor will ensure that appropriate temporary rewatering is utilised as appropriate until the proposed drainage network is established.
- A suitably qualified Ecological Clerk of Works (ECoW) will be present on-site during works for the construction of the overflow to the Translocated Marshland Area.
- Entry to the Corbally Stream by vehicles will be avoided, while vehicle usage along the banks will be restricted as much as practicable. Any machines working in close proximity of the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- Works will be carried out from the bank side, as best practice in-stream works will be restricted to the period 1st July through 30th September, to comply with the seasonal restrictions in salmonid rivers.
- Temporary diversion of water flow may be required to maintain continuous flow and prevent flooding during the connection process.
- Silt traps will be staggered along the length of the overflow, and not only at the lower reaches towards its outflow into the translocated wetland. Silt trap design can vary, from depressions added to the watercourse bed, to log sections laid lengthways into the drain, to the use of geotextile barriers. Once silt traps and silt fences become functional, they will be checked regularly and maintained as necessary, in order to ensure continued effectiveness throughout operations.
- Additional silt fences and other sediment control measures will be utilised as required to prevent sedimentation in the Corbally Stream.
- Regular monitoring of water quality upstream and downstream of the works area will be undertaken by the ECoW to detect any changes and take corrective actions if necessary.
- Existing vegetation will be preserved where possible and replant disturbed areas promptly to stabilize soil and reduce erosion.

Furthermore, works during the construction of the outfalls to the Corbally, Coldwater, and Cooldown Streams will include the following measures:

- The outfall headwalls will be constructed from precast concrete to allow their construction off site, while hoisting of the structure will be carried out from the site side of the riverbank.
- Once excavations for the outfall trenches are complete, the base and sides of the trenches will be seeded with a native wetland wild flora seed mix which will be allowed to establish for a 6–8-week period prior to the outfall trench becoming operational and receiving surface waters from the onsite drainage network. This is a grass mix with some wildflower elements which will aid the overall biodiversity approach/green infrastructure and provide “green” erosion prevention of the outfall channel and prevent siltation of the Corbally, Coldwater, and Cooldown Streams.

The contractor will employ an Environmental Clerk of Works (EnCoW) who will monitor water quality upstream and downstream of the area of works. The programme of water quality monitoring and locations of sampling will be agreed with SDCC in advance of construction works commencing. However, it is anticipated that data on pH, electrical conductivity, and turbidity, suspended solids and hydrocarbons will be collected as follows:

- Twice weekly visits during general site works
- Daily site visits during key construction activities (to be agreed between the environmental specialist, the appointed contractor and SDCC (e.g., during the construction of the translocated wetland, during installation of the proposed outfalls and stream crossings, during and immediately after clearance of on-site vegetation)).
- Event inspection (e.g., following heavy rainfall events or during concrete pours).

Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations will be agreed at commencement and based on the baseline established in the two months prior to works commencing. It is noted that where a deterioration in water quality is observed downstream of the site this will be brought to the attention of the contractor by the Environmental / Ecological Clerk of Works, and any suitable contingency measures will be instigated.

All monitoring data will be collated by the EnCoW to show trends for indicator parameters pH, conductivity, turbidity or suspended solids and hydrocarbons, and will be shared with SDCC as requested.

Control and Management of Water and Surface Runoff

There will be no direct discharge to groundwater or surface water during the construction phase of the Proposed Development.

Surface water runoff management will be required to prevent runoff entering excavations during construction. Surface water will require diversion around the open excavations using standard temporary drainage methods to ensure that surface water is effectively conveyed around works areas and with no adverse effects to the overall existing surface water flow regime.

Where dewatering of shallow groundwater is required or where surface water runoff must be pumped from the excavations, water will be managed in accordance with best practice

standards (i.e., CIRIA C750), the OCEMP (DNV, 2025), the project specific CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.

All run-off from the Site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required (e.g., settlement ponds, silt traps, silt busters, silt socks and / or hydrocarbon interceptors). Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to temporary onsite settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge at a controlled rate.

As mentioned in Chapter 7 Section 7.7.1.1, silt fencing or bunding will be installed along the boundaries of all onsite and adjoining waterbodies including the Corbally Stream, Coldwater Stream, and Cooldown Stream.

Stockpiles of loose materials pending re-use onsite or removal offsite will be located as far as feasible from the Corbally Stream, Coldwater Stream, and Cooldown Stream (a minimum set back of 20m from watercourses will be maintained) and will be appropriately sealed / covered and a silt fence or bunding will be installed around it to ensure no soils and sediments are washed out overland to the receiving surface waterbodies. The silt fence or bunding will be installed on three sides of the stockpiled material with access from the fourth (up-hill) side.

The performance of all surface water management measures including settlement ponds and silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed development. Where necessary, maintenance will be carried out to ensure that the measures continue to be effective. This will be particularly important after heavy rainfall events.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. The Appointed contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by Uisce Eireann (UE) under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from South Dublin County Council (SDCC) under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released to ground or to drains. Existing surface water drainage located along public roads will be protected for the duration of the works to ensure that any untreated wastewater generated onsite does not enter the public sewers.

There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Where necessary, surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction.

The appointed contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As

the risk of the break-out of silt laden runoff is higher during these weather conditions, no work will be carried out during such periods where possible.

Public roads outside the site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all lorries will be cleaned prior to leaving the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

Discharge from any vehicle wheel wash area is to be directed to an onsite settlement tank for discharge to the UE foul network (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor. Any debris or sediment within the wheel-wash will be emptied periodically for disposal offsite at a licenced facility.

Concrete Works

The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the appointed contractor and in accordance with the project specific CEMP (DNV, 2025a) and relevant industry standards.

Where possible precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths etc.), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater and surface water.

The following mitigation measures will be implemented.

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.
- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

Weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

Piling

The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how the proposed piling methodology will minimise the potential for the introduction of any temporary conduit between any potential

sources of contamination at the ground surface and underlying groundwater. The piling method will include procedures to ensure any potential impact to water quality is prevented, including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation. Where there is a requirement to use lubricants, drilling fluids or additives, the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

Handling of Fuels and Hazardous Materials

Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite).

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. It is noted that the use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism.

Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

All fuel storage areas will be bunded in the site compound and will be clearly marked. The bund will be at least 50m away from open waterbodies. A designated impermeable refuelling area will also be established with all plant brought to this point for filling. Spill kits will be kept in these areas in the event of spillages. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development Site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

Emergency Procedures

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., accidental fuel spillages). Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed offsite. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff onsite will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the construction phase of the Proposed Development.

Infrastructure

All below ground foul drainage infrastructure will be constructed in accordance with current UE requirements to ensure that there are no potential effects to groundwater quality.

Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by an appropriately authorised contractor.

Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by UE.

Removal of Surplus Materials and Waste

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) and will be managed in accordance with all statutory obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27).

Any surplus material not suitable for re-use as a by-product and other waste materials arising from the construction phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential impacts at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Monitoring

During the construction phase of the Proposed Development, the following monitoring measures will be considered:

- An ECoW and EnCoW will be appointed to ensure best practices are carried out during critical stages of the construction works associated with surface water in particular works for the overflow to the translocated marshland area, construction of the proposed headwalls and bridge crossings.
- The ECoW will be present on-site during works for the construction of the overflow to the Translocated Marshland Area.
- The EnCoW will undertake visual inspection and monitoring (pH, electrical conductivity, turbidity, suspended solids and hydrocarbons) prior to, during and post overflow, headwall and bridge crossing construction works to ensure minimum disturbance of water quality in the receiving environment.
- The programme of water quality monitoring and locations of sampling will be agreed with SDCC in advance of construction works commencing. However, it is anticipated that monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction and during works as follows:
    - Twice weekly visits during general site works
    - Daily site visits during key construction activities (to be agreed between the environmental specialist, the appointed contractor and SDCC (e.g., during the construction of the translocated wetland, during installation of the proposed outfalls and stream crossings, during and immediately after clearance of on-site vegetation)).
    - Event inspection (e.g., following heavy rainfall events or during concrete pours).
- All monitoring data will be collated by the EnCoW to show trends for indicator parameters pH, conductivity, turbidity or suspended solids and hydrocarbons, and will be shared with SDCC as requested. Where a deterioration in water quality is observed downstream of the site this will be brought to the attention of the contractor by the Environmental / Ecological Clerk of Works, and any suitable contingency measures will be instigated.
- Inspection records and summary reports from site supervision by the ECoW and EnCoW will be made available to SDCC upon request.
- Inspections will be undertaken by the contractor's appointed Environmental Manager or delegate during excavations and other groundworks to ensure that measures are protective of water quality outlined in this EIAR are fully implemented and effective and are in compliance with the CEMP (DNV, 2025a) and that the requirements of the Conditions of Planning, the NIS and associated documentation are being adhered to during construction.
- All surface water control measures including silt traps, silt fences and settlement ponds will be checked regularly and maintained by the Environmental Manager or delegate as necessary, in order to ensure continued effectiveness throughout the construction phase.
- Only suitably trained staff will undertake environmental site inspections.
- Discharges of groundwater and/or water pumped from excavations to surface water or foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge license). This may include sampling and laboratory analysis of treated water prior to discharge.

- Routine monitoring and inspections will be undertaken during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures

17.3.4.2 Operational Phase

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the Proposed Development.

Mitigation

Based on the design of the Proposed Development there are limited potential sources of contamination during the operational phase.

Surface water will be managed in accordance with the principles and objectives of SuDS and the GDSDS to treat and attenuate water prior to discharging offsite. Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be incorporated into the overall management strategy for the Proposed Development. This will ensure that there are no effects on water quality and quantity (flow regime) during the operational phase of the Proposed Development.

Standard design and construction measures will be implemented to mitigate potential impacts associated with shallow groundwater. These include the incorporation of groundwater drainage systems around impermeable subsurface structures, such as building foundations, attenuation tanks, and temporary construction barriers. These measures will minimise the risk of groundwater mounding on the upgradient side of structures and reduce the potential for buoyancy-related issues.

Where building foundations and utility infrastructure intersect the groundwater table, appropriate structural design and perimeter drainage will be employed to prevent groundwater ingress and maintain the integrity of below-ground assets.

Stream crossings have been designed in accordance with OPW requirements, with soffit levels at least 500mm above the 1% Annual Exceedance Probability (AEP) flood level. Two vehicular crossings meet road level constraints and have received OPW Section 50 consent.

To manage shallow groundwater and reduce surface-level flood risk, a network of land drains will be installed across the site. These drains are designed to intercept and convey groundwater, discharging to the Corbally Stream, Coldwater Stream, and Cooldown Stream. As documented in the HRA (DNV, 2025c), the proposed drainage system has been designed with sufficient capacity to accommodate the total estimated 26.07 m^3/day of intercepted shallow groundwater. This confirms that the system is appropriately engineered to manage anticipated volumes under steady-state conditions, while also contributing to flood risk reduction and the long-term viability of the translocated wetland habitat.

Foul water during the operational phase of the Proposed Development will ultimately discharge via the Ringsend WWTP to the Liffey Lower Estuary transitional waterbody. The Ringsend WWTP is operated in accordance with relevant statutory approvals issued by UE. Foul water from the site will only be discharged to the UE network under the appropriate consents from UE, and therefore, the Proposed Development will not cause a potential effect at any Natura 2000 sites associated with discharges from the site.

There is no other requirement for mitigation measures for the operational phase of the Proposed Development.

Monitoring

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the Proposed Development.

17.3.5 Air Quality

17.3.5.1 Construction Phase

Mitigation

Construction site dust control measures and good construction site management and practice is capable of effectively mitigating the potential for significant impact of fugitive dust emissions. Therefore, the potential for fugitive dust emission effects at the nearest sensitive receptors will be controlled to ensure impacts are of negligible significance.

The IAQM Guidance recommends that significance is only assigned to the effect after considering the construction activity with mitigation. Therefore, the detailed mitigation measures have been defined in a form suitable for implementation by way of a planning condition and will be included in a Construction Environmental Management Plan.

There are 18 sensitive residential properties <20m from the site boundary. Using the IAQM methodology for the assessment of air quality impacts from construction activities as shown in Table 8-8-16 has indicated that the risk of dust soiling for demolition is negligible and high risk for earthworks, construction and trackout. The impacts on human health are negligible for demolition and low risk for earthworks, construction and trackout. The ecological impacts are negligible for demolition and low risk for earthworks, construction and trackout.

In accordance with the IAQM Guidance, the highest risk category should be applied when determining proposed mitigation measures. Therefore, the mitigation measures applicable to a high risk site will be applied:

<u>General Measures</u>

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.

Dust Management

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring

and/or visual inspections.

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28 - 32 days.

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 logbook.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary if applicable, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- 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 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

The IAQM Guidance Mitigation Measures applicable to the specific works undertaken are as follows:

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 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 power 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 permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

Monitoring of air quality and dust related impacts will be required during the construction stage only of the Proposed Development. The monitoring activities are to:

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28 - 32 days.

17.3.5.2 Operational Phase

Mitigation

There is no requirement for mitigation measures relating to the operational phase. The development has been shown to be not significant in terms of air quality. Future proposed engine improvements and a transition to electric vehicles will result in continued improvement in urban air quality into the future.

In terms of space heating, the proposal is expected to utilise electric heating for both hot water and space heating. Therefore, there will be no pollutant emissions to atmosphere from traditional combustion sources, such as oil or gas boiler heating systems.

Monitoring

No operational monitoring is required.

17.3.6 Climate

17.3.6.1 Construction Phase

Mitigation

Climate Resilience Avoidance, Remedial & Mitigation Measures

During the construction stage specific climate resilience measures should focus on ensuring durability, water management, and energy efficiency while mitigating risks associated with extreme weather. Regarding the development's resilience to climate change, the Contractor will be required to mitigate the effects of extreme weather, such as heavy rainfall, flooding, windstorms, and temperature fluctuations, through site risk assessments and method statements.

Here are key Avoidance, Remedial & Mitigation Measures:

Foundation & Site Preparation

- Flood Resilient Foundations: Use raised foundations, elevated platforms, or piling where necessary in flood-prone areas.
- Sustainable Drainage Installation: Implement permeable surfaces, drainage channels, and attenuation tanks early in construction.
- Soil Stabilisation: Prevent erosion with silt fences, geotextiles, and retaining structures to withstand heavy rainfall.

Structural Reinforcement

- Wind-Resistant Framing: Use reinforced concrete or steel frames with proper anchoring to withstand storms.
- Secure Roof Fixings: Ensure hurricane straps, reinforced trusses, and mechanically fixed roof tiles to prevent wind damage.
- Impact-Resistant Windows & Doors: Install reinforced glass or shutters to reduce storm-related damage.

Water & Moisture Management

- Damp-Proofing Measures: Use high-quality damp-proof membranes (DPM) and damp-proof courses (DPC) in walls and floors.
- Proper Drainage on Site: Ensure temporary drainage solutions (e.g., trenches, sumps) to manage rainwater during construction.
- Weatherproofing Structures: Apply breathable but water-resistant membranes on external walls before cladding installation.

Material Selection & Handling

- Use Climate-Resilient Materials: Opt for treated timber, marine-grade plywood, concrete with low permeability, and corrosion-resistant steel.
- Storage & Protection of Materials: Keep materials covered and off the ground to prevent water damage or degradation.
- Low-Carbon Concrete & Insulation: Use alternatives like GGBS (Ground Granulated Blast-furnace Slag) concrete and eco-friendly insulation.

Energy Efficiency & Passive Design Implementation

- High-Performance Insulation Installation: Ensure proper fitting to avoid thermal bridging and moisture ingress.
- Airtightness Testing During Construction: Conduct interim blower door tests before final finishes to confirm air sealing effectiveness.
- Green Roof Base Layers: Install waterproofing and root barriers early if a green roof is part of the design.

On-Site Climate Adaptation Measures

- Construction Scheduling Considerations: Plan for extreme weather events, avoiding major excavation or external works in heavy rain seasons.
- Cold/Hot Weather Plan: Strategies such as planned road gritting, thermal protection, chemical accelerants, temporary enclosures, and alternative heating/cooling solutions enable builders to overcome these obstacles and achieve successful project outcomes.
- Temporary Wind & Rain Barriers: Use tarpaulins, scaffolding covers, and temporary roofing to protect partially built structures.
- Emergency Power Supply: Have generators or battery backups on site to maintain critical construction processes.

GHG Resilience Avoidance, Remedial & Mitigation Measures

Embodied carbon of materials and construction activities is the primary source of climate impacts during the construction phase. Further pre-construction carbon Avoidance, Remedial & Mitigation Measures include:

Design for Performance

- Request a Design for Performance approach from design teams and contractors.
- Include contractual targets for whole life carbon with a focus on Net Zero and nature-positive goals where possible.

Circularity in Design

- Require design teams to develop a circularity concept for projects, focusing on adaptability, disassembly, and reuse.
- Set a target for a percentage of reused and recycled materials in designs.

Building Lifecycle Report

- Ensure the building lifecycle report is regularly reviewed and updated in line with current policy and best practice for sustainable construction.

Carbon Literacy

- Develop carbon literacy within design and construction teams by providing training on carbon literacy, ESG reporting, and disclosure.
- Incorporate sustainability and carbon considerations into site team talks, construction targets, and reporting.
- Include training clauses for contractors and sub-contractors to upskill their teams in low-energy construction techniques.

Building Renovation Passports (BRPs)

- Request Building Renovation Passports for this asset as part of the roadmap to decarbonise each asset.

Cement Reduction

- Specify the minimum amount of cement needed in concrete and substitute where feasible to reduce cement usage.

Sustainable Procurement

- Review sustainable procurement and material choices during detailed design to identify and implement lower embodied carbon options.
- Request Environmental Product Declarations (EPDs) and prefer products with EPDs where possible within procurement restrictions.
- Drive demand for EPDs by increasing the percentage of products used in the project with EPDs.

European Framework for Sustainable Buildings

- Commit to using key indicators from the European Framework for sustainable buildings, Level(s), with support from the IGBC.
- Focus on indicators such as Life Cycle Assessment (LCA), Life Cycle Cost (LCC), Indoor Air Quality (IAQ), and Circularity.

Energy and Carbon Performance Reporting

- Plan to disclose the operational energy and carbon performance of the project in your annual reporting.

Post-Occupancy Evaluation

- Allow for post-occupancy evaluation of completed developments to ensure feedback is passed to the design team.

Demolition and Construction Waste Management

- Create a demolition and construction programme allowing sufficient time to determine reuse and recycling opportunities for demolition waste.
- Appoint a competent demolition contractor to undertake a pre-demolition audit detailing resource recovery best practice and identifying materials for reuse and recycling.
- Reuse materials on site in the new build areas where possible.

EU Taxonomy Compliance

- Commit to complying with EU taxonomy requirements on the circular economy, specifically reuse, recycling, and material recovery of demolition and construction waste.
- Review and ensure compliance with the EU Taxonomy Regulation (EU) 2020/852 regarding circular economy practices for demolition and construction waste.

Local Material Sourcing

- Source materials locally where possible to reduce transport-related CO2 emissions.

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- **Energy-Efficient Equipment**: Deploy modern, low-emission or electric machinery. Maintain equipment regularly to ensure optimal performance and reduced fuel use.
- **Renewable Energy**: Use renewable sources, such as solar panels or battery units, to power site operations where feasible.
- **Reduce Idling**: Enforce a no-idling policy for all vehicles and machinery to cut unnecessary emissions.
- **Sustainability Awareness**: Include carbon reduction in site inductions, toolbox talks, and reporting. Provide training for contractors and appoint sustainability champions to lead on-site initiatives.
- **Sustainable Transportation**: Promote carpooling, public transport, and electric vehicle use among site workers.
- **Monitoring and Reporting**: Track site emissions through fuel and energy use. Conduct regular checks and share findings to ensure compliance and continuous improvement.
- **Maintenance**: Keep all plant and machinery in good working order through scheduled inspections and servicing.

- **Waste Management**: Apply the waste hierarchy to reduce, reuse, and recycle materials. Avoid over-ordering and manage waste through a Construction and Demolition Waste Management Plan.
- **Sustainable Procurement**: Source low-carbon, locally available materials with environmental certifications to reduce embodied emissions.

Monitoring

We recommend the following monitoring strategies to ensure compliance with the environmental objectives outlined in this EIA. These strategies are essential for effectively managing the environmental impacts associated with the demolition and construction phases, with a particular focus on resource recovery, waste management, and the reduction of GHG emissions.

Monitoring of Demolition Waste Reuse and Recycling

To optimise the reuse and recycling of demolition materials, we recommend implementing the following:

- Material Reuse Tracking System: A digital tracking system could be established to monitor materials identified for reuse or recycling. This system will log details such as quantities, conditions, and intended applications within the new construction areas. It is important that this system is regularly updated to reflect ongoing recovery efforts.
- Weekly Progress Reports: It is suggested that the demolition contractor be required to submit weekly progress reports. These reports should provide detailed metrics on the volumes of materials recovered, reused, and recycled, alongside any challenges encountered. This approach will allow for the early identification of issues and timely adjustments to the recovery plan.
- Regular On-Site Inspections: It is suggested that regular inspections are conducted to verify that materials earmarked for reuse are being properly stored and handled. These inspections should ensure that materials remain in suitable condition for their intended use in the new build areas.

Competency and Performance of Demolition Contractor

To ensure that the demolition process aligns with the project's environmental goals, we propose the following monitoring measures:

- Verification of Pre-Demolition Audit: The pre-demolition audit conducted by the appointed contractor should be thoroughly reviewed to confirm that all materials and components suitable for reuse or recycling have been accurately identified. This review will ensure that the audit reflects best practice in resource recovery.
- Periodic Contractor Performance Reviews: We suggest conducting periodic performance reviews of the demolition contractor. These reviews should focus on their adherence to the resource recovery plan, the accuracy of material identification, and their overall compliance with project timelines without compromising environmental standards.

Compliance with EU Taxonomy for Circular Economy

Given the project's commitment to meeting EU taxonomy requirements, we recommend the following:

- Comprehensive Documentation and Reporting: It is essential to maintain detailed records that document compliance with the circular economy principles outlined in the EU taxonomy. This documentation should include logs of all recycled materials, percentages of materials reused on-site, and detailed descriptions of how circular economy practices are being implemented.
- Independent Third-Party Audits: It is suggested that an independent auditor is engaged to periodically assess the project's compliance with the EU taxonomy. The audit should verify the accuracy of reported data and ensure that the circular economy requirements are fully adhered to throughout the project.

Monitoring of GHG Emissions Reduction Measures

To mitigate the project's impact on climate change, the following monitoring activities are proposed:

- Appoint sustainability champions to ensure that the project continues to perform in a sustainable manner including monitoring and reporting of performance on site.
- Idle Time Monitoring for Vehicles and Machinery: It is suggested that GPS or telematics systems are installed on all vehicles and machinery used on-site to monitor engine idling times. Automatic alerts should be set up to notify site managers when idling exceeds a specified threshold, enabling prompt corrective action to reduce unnecessary emissions.
- Maintenance Logs for Plant and Machinery: Implementing a digital maintenance log system to track the inspection and maintenance of all on-site equipment is recommended. This system should record inspection dates, maintenance activities, and any identified issues, ensuring that all machinery operates efficiently and with minimal emissions.
- Material Waste Minimisation Tracking: A monitoring system should be developed to track material orders and usage. This system should identify trends in over-ordering or inefficient material use, enabling the project team to take corrective actions that will help minimise the embodied carbon footprint of the site.

Application of Waste Hierarchy

To optimise waste management on-site, the following monitoring protocols are suggested:

- Waste Segregation Audits: Regular audits should be conducted to ensure that waste is being properly segregated according to the waste hierarchy (reduce, reuse, recycle). These audits will help identify opportunities for improving waste management practices and reducing overall waste generation.
- Monthly Waste Management Reports: It is suggested that monthly reports are generated detailing the volume of waste reduced, reused, and recycled. These reports should be compared against predefined targets to assess the effectiveness of the waste management strategies and to identify areas for improvement.

Local Sourcing of Materials

To reduce transport-related emissions and support local suppliers, the following measures are suggested:

- Supplier Distance Monitoring: A database of suppliers should be developed, documenting the distance of each supplier from the construction site. This database should be used to monitor and minimise the carbon footprint associated with material transportation, prioritising local suppliers wherever possible.
- Transport-Related Carbon Footprint Analysis: Conducting a carbon footprint analysis for the transportation of all materials to the site is recommended. This analysis should inform the selection of suppliers, with a preference for those within a closer radius to reduce CO2 emissions.

These monitoring recommendations are designed to ensure that the project adheres to its environmental commitments, particularly in the areas of resource recovery, waste management, and greenhouse gas emissions reduction. By implementing these strategies, the project will not only comply with regulatory requirements but also contribute to broader environmental sustainability goals. Regular reporting, on-site inspections, and third-party audits will be critical to maintaining compliance and achieving the desired environmental outcomes.

17.3.6.2 Operational Phase

Mitigation

A number of measures have been incorporated into the design of the development in order to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the Proposed Development to climate change (see Section 9.7.3).

The Proposed Development has been designed to reduce the impact on climate as a result of energy usage during operation. The Energy Report prepared by BBSC and building lifecycle report prepared by MCORM Architecture and Urban Design and submitted under separate cover with this planning application details a number of incorporated design mitigation measures included in the development to reduce the impact on climate wherever possible.

Such measures included in the Proposed Development to reduce the impact to climate from energy usage are:

- The development is designed to comply with the Near Zero Energy Building (NZEB) standards, in accordance with Part L (2021) of the Building Regulations.
- A Building Energy Rating (BER) of A2/A3 is targeted for all dwellings, with energy performance assessed using the SEAI DEAP methodology.
- The development incorporates high-performance building fabric, including low U-values, improved air permeability, and minimized thermal bridging, to reduce heat loss and improve energy efficiency.
- Renewable energy technologies, including photovoltaic (PV) solar panels and air source heat pumps, are planned to meet the renewable energy contribution required under Part L.
- All internal and external lighting will utilize energy-efficient LED luminaires, with automatic controls such as motion sensors in common areas to enhance efficiency.

- Mechanical ventilation systems, including heat recovery ventilation (MVHR), are considered to improve indoor air quality while minimizing energy use.
- No fossil fuel-based heating systems will be used; instead, electric air source heat pumps will provide space and water heating.
- Occupants will receive a comprehensive Home User Guide with information on building systems, appliances, and energy-saving features to support informed and efficient operation of their homes.

In addition, electric vehicle and bicycle parking will be provided within the development which will promote the use of more sustainable modes of transport and reduce potential transport emissions. Full descriptions of the measures proposed and their benefits are outlined within the Building Lifecycle Report submitted with this application.

Monitoring

Environmental Management Plan that incorporates adaptive management principles.

Ensure climate change resilience plans are robust; continued monitoring of trends in weather events; and continued review of resilience measures related to interdependencies.

We recommend the following monitoring strategies to ensure that the Proposed Development meets its environmental objectives. These strategies focus on mitigating the impacts of climate change, enhancing energy efficiency, and promoting sustainable transport, all of which are aligned with best practices outlined in ISEP guidelines.

Monitoring of Climate Change Mitigation Measures

- **Attenuation and Drainage Systems Monitoring**: Consistent with ISEP's guidance on climate resilience, regular inspections should be undertaken to verify the functionality of the attenuation and drainage systems. These inspections should be conducted during construction, after significant rainfall events, and periodically thereafter to ensure long-term effectiveness in preventing flooding.
- **Climate Vulnerability Assessment Review**: In accordance with ISEP's recommendation to periodically reassess climate risks, we suggest reviewing the climate vulnerability assessment (as detailed in Section 9.7.3) at regular intervals. This review should incorporate the latest climate projections to ensure the mitigation measures remain adequate and effective.

Monitoring of Energy Efficiency and Climate Impact Reduction

To minimise the impact of the development on climate through energy use during operation, the following monitoring activities are recommended:

- **NZEB Compliance Verification**: Continuous monitoring during the construction phase should ensure that the development complies with the Near Zero Energy Building (NZEB) Standards. This includes verifying that all building components and systems meet the NZEB criteria.
- **EU Taxonomy Alignment Monitoring**: Ensure that the development achieves energy performance that is at least 10% lower than the NZEB requirements. Regular energy

performance assessments should be conducted to confirm alignment with the EU Taxonomy for sustainable development.

- **Renewable Energy Ratio (RER) Compliance**: Monitor the implementation of renewable energy systems, such as solar panels and air source heat pumps, to ensure that the development achieves a Renewable Energy Ratio (RER) of 20%, in line with Part L (2021) of the NZEB regulations. Post-installation, periodic checks should be performed to verify ongoing compliance.
- **Building Energy Rating (BER) Target Achievement**: Regular energy audits should be carried out to monitor the building's energy performance, ensuring that the targeted Building Energy Rating (BER) of A2/A3 is achieved. This includes verifying the efficiency of insulation, windows, HVAC systems, and other energy-related components.
- **Thermal Performance Monitoring**: Continuous monitoring during construction should ensure that the building achieves the improved thermal transmittance (U-Values), air permeability, and thermal bridging standards specified in the design. Post-construction thermal imaging surveys and air tightness tests should be conducted to confirm that these standards have been met.

Monitoring of Renewable Energy Systems

To ensure the successful implementation and operation of renewable energy systems, the following monitoring measures are recommended:

- **Air Source Heat Pump Performance**: Regular inspections and maintenance checks should be conducted on the air source heat pumps to ensure they are operating efficiently and contributing effectively to the building's energy needs. Performance metrics such as Coefficient of Performance (COP) and Seasonal Performance Factor (SPF) should be tracked and compared against the expected values.
- **Occupant Sustainability Information**: Consistent with ISEP's emphasis on stakeholder engagement, it is important to ensure that all building occupants receive comprehensive sustainability information. This should include guidance on energy conservation practices and how to use renewable energy systems effectively. Feedback mechanisms, such as surveys, should be used to assess the impact of this information on occupant behaviour.

Monitoring of Sustainable Transport Initiatives

To promote sustainable transport and reduce transport-related emissions, the following monitoring strategies are suggested:

- **Electric Vehicle (EV) and Bicycle Parking Usage**: Regular monitoring should be carried out to assess the usage of electric vehicle charging stations and bicycle parking facilities within the development. This will help gauge the effectiveness of these measures in promoting sustainable transport modes. Usage data can inform whether additional facilities or adjustments are needed.
- **Transport Emissions Impact Assessment**: Periodic assessments should be conducted to evaluate the impact of the provided sustainable transport facilities on

reducing overall transport emissions. This could include monitoring the uptake of electric vehicles by residents and the corresponding reduction in GHG emissions.

These monitoring recommendations are designed to ensure that the development's climate change mitigation measures, energy efficiency initiatives, and sustainable transport provisions are effectively implemented and maintained throughout the lifecycle of the project. By adhering to these strategies, the development will not only comply with relevant regulatory requirements but also contribute to broader environmental sustainability goals. Regular inspections, energy performance assessments, and occupant engagement will be crucial to achieving the desired environmental outcomes.

17.3.7 Noise and Vibration

17.3.7.1 Construction Phase

Mitigation

Best practice measures for noise and vibration from construction sites are found within BS 5228 (2009+A1:2014) part 1 and part 2. Construction noise effects are expected to vary during the construction phase of the Proposed Development; this effect will depend on the distance between the construction activities and noise sensitive receptors. The contractor will ensure that all best practice noise control measures will be used, to ensure any negative noise effects at noise sensitive locations are minimised. The mitigation measures outlined in this chapter will be incorporated into the CEMP.

The best practice measures set out in BS 5228 (2009) Part 1 and 2 includes guidance on several aspects of construction site mitigation measures, this includes the:

- Selection of quiet plant and equipment;
- Noise control at source of the noise;
- Screening; and
- Public liaison.

Selection of Plant and Machinery

The noise effect of all plant and machinery shall be assessed prior to selection of the plant for the project. All plant used onsite will comply with S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001.

Noise Control at Source

Where replacing a noisy item of plant is not viable or practical, noise shall be controlled at source. This includes modifying the piece of plant or machinery to generate less noise, using dampening to control vibration induced noise or rattling. Example best practice mitigation measures to be used are as follows:

- All plant and equipment to be switched off when not in use to prevent idling;
- The use of white noise reversing alarms;
- Restriction on the dropping and loading of materials to less sensitive hours;
- The use of local screening for noisy activities or works with hand tools;
- Not dropping materials onto hard surfaces and using rubber mats etc for the dropping of materials; and

- Ensure all plant and equipment is well maintained and cleaned, all lubrication should be in line with manufacturers guidelines.

Vibration Control

Vibration monitoring will be implement during the demolition and substructure stages of the construction phase to ensure vibration effects are monitored and controlled adequately as to not cause significant effect at the surrounding sensitive receptors. Suitable locations for vibration monitoring are at NSL1 and NSL4.

Screening

Screening will be used to reduce the construction noise effect on the NSLs. The use of site hoarding and careful selection of areas for noisy works, using buildings on the site, site offices and the building being constructed to screen noise from the works.

Local screening of noisy works with the use of temporary acoustic barriers, examples are as follows:

Chapter 10 Figure 10-1 Temporary Construction Noise Barrier © Ventac

Public Engagement

A public liaison officer shall be put forward by the contractor to liaise with the local residents on matters relating to noise. Residents shall be informed of any noise works scheduled where there is the potential to generate high levels of construction noise or if specialist works etc need to be conducted out of the working hours. This person shall also be the point of contact for all complaints and be responsible for reviewing the noise monitoring results and exceedances.

This is crucial as the construction of the development is proposed to be a phase construction and occupancy approach with the construction of phase 1A and phase 1B being constructed, with phase 2A and 2B beginning shortly after occupancy of phase 1A and 1B. A public liaison officer shall be appointed by the contractor to liaise with the occupants of phase 1A and 1B regarding matters of noise and vibration disturbance.

Site Specific Recommendations

The calculations set out in Table 10-9 of Section 10.5.2.1 are based on assumed site construction works and a combination of the plant operating at the same time i.e. a worst-case scenario. While this may not reflect actual site conditions, the assessment has been carried out on a conservative basis. Table 10-36 - Table 10-41 outlines the required attenuation for each construction stage.

Table 10-1 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 1A.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0

Table 10-2 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 1B.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	2	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0

Table 10-3 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 2A.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0

Table 10-4 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 2B.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
Phase 2A	65	0	0	0	0

Table 10-5 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 3A.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	4	1	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0
Phase 2B	65	0	0	0	0

Table 10-6 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 3B.

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	3	0	0

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0
Phase 2B	65	0	0	0	0
Phase 3A	65	0	6	3	0

Table 10-42 outlines the recommended site-specific noise mitigation measures.

Table 10-7 Mitigation Measures Required During Construction Phase

Construction Stage	Recommended Noise Mitigation Measures
Site Setup	Erect a minimum 2.4m high site hoarding that blocks the line of sight between noise source and receiver. Example construction for the site hording would be as follows: A 2.4m high and 9mm plywood (4.5 kg/m2). Barrier must be solid and not contain gaps at the bottom or between adjacent panels Local screening are required around hand tools in addition to hoarding.
	An absorptive lining shall be considered for screening around hand tools will need to have an absorptive lining to avoid reflections increasing noise at other receivers. On this project 8 NSL's have been identified, It is recommended that a noise monitor shall be placed on the boundary of the nearest noise sensitive locations closest to the works i.e. NSL1 and NSL8/NSL9 during phase 2 in this case.
Substructure	Site hoarding to block line of sight. Local screening around noisy plant and equipment. Noise and vibration monitoring as above
Superstructure	Local screening around saws/hammers where possible. Use external new building to screen noise from works where possible.

Construction Stage	Recommended Noise Mitigation Measures
	Noise and vibration monitoring as above
External finishes	Local screening around hand tools. Noise and vibration monitoring as above

Monitoring

Noise and vibration monitoring will be implemented during the construction phase of the Proposed Development, particularly during the substructure works when piling operations are likely to occur. Given the proximity of multiple NSLs to the site, monitoring equipment shall be installed at NSL 4 during phase 1A/B and NSL3 during phase 2A/B and NSL1 during phase 3A/B, as these locations are closest to the anticipated construction activities.

17.3.7.2 Operational Phase

Mitigation

Noise Mitigation Measures

The assessment conducted on the operational phase of the Proposed Development takes into account the operation of the public and communal open spaces, car parking and creche outdoor play area. The predicted results of the operational noise assessment predict that there will be no significant noise effect on the surrounding sensitive receptors, therefore no mitigation measures are required to control operational noise levels from the proposed development.

At design development stage, when the final plant and equipment schedule developed, noise levels for each piece of equipment shall be reviewed by an Acoustic Consultant to ensure compliance with the limits set in this chapter and to protect the amenity of the future residents of the Proposed Development.

Vibration Mitigation Recommendations

There are no predicted vibration sources during the operational phase, therefore, mitigation measures are not required to control operational phase vibrations. This shall be reviewed as part of the design review once the final plant and equipment selections are known.

Operational Phase – Inward Impact

Building Envelope Specification

This section outlines the building envelope requirements based on the measurements outlined in Chapter 10 Section 10.3.2. Facade, wall, glazing, roof and ventilation specifications have been determined to achieve the internal noise level criteria for the development. The specification has been determined in accordance with EN ISO 12354-3: 2017 based on the predicted façade day and night noise levels. The specification outlined in this section is based on the measured noise levels at the site and has taken into consideration aircraft noise. Consideration has also been given to the internal roads within the site.

The building envelope specification should be confirmed by the acoustic consultant at design stage once the internal layouts and design development has been completed. Any changes to the assumed ventilation strategy and glazing requirement should be considered as part of the review and it should be based on the internal noise levels cited in this report.

The glazed elements and ventilation openings are typically the acoustically weakest elements of any façade. The required sound insulation performance of façade glazed elements and ventilation openings is outlined in Table 10-43.

It is required that the glazing, frame and seals as a whole achieve the performance when the window is in the closed position. The performance requirements outlined in Table 10-43 are considered to provide adequate sound insulation to achieve the relevant day and night internal design goals respectively.

Table 10-8 Sound Insulation Performance for Glazed Elements and Ventilation

Façade	Glazed Elements (Frame & Glazing) Sound Insulation Requirements (Indicative requirements equal or approved)							Façade Ventilation Requirement2
	Octave Band Frequency Requirements1 R dB						Glazing Acoustic Performance dB RW	
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
RED	28	20	28	35	40	42	32dB Rw	35dB Dn,e,w (1) Natural Ventilation or Mechanical Ventilation
All other Facade	Standard Double Glazing[3]							Standard passive ventilation

1) Natural ventilation assumed throughout. Should this change to mechanical ventilation the above specification may be reduced. An acoustic consultant should be engaged to assess the level of reduction appropriate to maintain the internal noise level criteria.

2) The calculation assumes a maximum of 1 ventilation opening per bedroom at the specification outlined in the Acoustic Design Statement.

3) Standard double glazing assumes a construction of two panes of 3mm glass with a 10mm cavity achieving a minimum 29dB R_W, equal or approved. Similarly, standard natural ventilation assumes a performance of 29dB $D_{n,e,w}$.

Figure 10-2 Façade Specification Markup Detailing the Glazing Specification

It is important to note that the requirements outlined above are minimum requirements for the glazed element as a whole. The octave band values are indicative and specific to the assessed glazing type, equal or approved to meet the minimum project requirements is acceptable.

We understand the ventilation strategy for the development has not been confirmed at this stage of the design. It has been assumed that ventilation will be provided via natural ventilation system. Should the ventilation strategy change to mechanical ventilation strategy Wave Dynamics should be notified. Typically, the use of a natural ventilation strategy will lead to an enhanced glazing specification compared to a sealed mechanical ventilation system. This assessment is based on the windows in closed position.

External Wall Construction

The façade wall construction has been assumed to achieve a minimum sound insulation performance of 56dB R_W. Typical façade construction such as concrete, blockwork, timber frame and brick offer high levels of sound insulation and will meet this requirement.

Roof Construction

The roof construction has been assumed to achieve a minimum sound insulation performance of 50dB R_W. Any skylights and glazing in the roof system to corridor or communal areas should be of standard double-glazed construction to meet a performance of minimum 29 dB R_w. If there are any skylights to habitable bedrooms Wave Dynamics should be informed to provide specific guidance in each case.

External Amenity Space

Measured daytime noise levels across the Proposed Development lands were generally found to be below the external amenity criterion of 55 dB(A) as outlined in ProPG:2017, indicating that the existing acoustic environment is compliant with external amenity criterion. While marginally elevated levels were recorded at location L1 closest to existing road infrastructure, these values reduce significantly with distance into the site. As the development is constructed, the introduction of new buildings will provide substantial screening from surrounding noise sources. Consequently, external amenity spaces located deeper within the site are expected to experience further reductions in noise levels, benefiting from screening effects and resulting in an improved overall acoustic environment for future occupants.

Monitoring

Noise and vibration monitoring is not required during the operational phase of the Proposed Development as the predicted noise levels during the operational phase fall within project criteria, and there are no predicted sources of operational vibration proposed for the development.

17.3.8 Landscape and Visual Amenity

17.3.8.1 Construction Phase

Mitigation

The key landscape and visual mitigation measures used during the construction phase have been incorporated into the layout of the site and design of the proposed buildings and landscaping as outlined in the architectural drawings and sections and the landscape proposal and report. By responding to the site topography, modulation of the buildings, façade articulation and suitable landscaping for the situation, the buildings are absorbed into the surrounding landscape as demonstrated in sections, verified views and CGI images. A range of materials and building typologies are used to complement the existing types found in the surrounding built environment and landscape.

Monitoring

To ensure the successful implementation of the landscape proposals, detailed tender drawings and specifications will be prepared in line with best practice standards. These documents will outline procedures for tree works, soil handling, planting techniques, and maintenance requirements. All landscape works will be overseen by a qualified landscape architect to ensure compliance with the design intent and quality standards. Planting operations will be scheduled to take place during the appropriate planting season, following the completion of the main civil engineering and construction activities.

17.3.8.2 Operational Phase

Mitigation

As the proposed landscaping matures the larger growing tree species can be expected to grow in this location to significant heights of approximately 10-15m and will grow to be significant landscape features in themselves that will counter balance the tallest part of the development. The smaller growing tree species can be expected in this location to reach 5-10m in height and will counterbalance the smaller scale parts of the proposed development.

The retention and reinforcement of most hedgerows will further help mitigate visual and landscape impacts.

Monitoring

Monitoring of the mitigation measures will form part of the landscape management plan. Replacement trees, replacement planting and pruning measures will be captured in landscape maintenance plans and are intrinsically linked to the proposed mitigation measures. All landscape works will be in an establishment phase for the initial three years from planting. A landscape maintenance plan/specifications accompanies the planning application. Prior to completion of the landscape works, a competent landscape contractor will be engaged and a detailed maintenance plan, scope of operation and methodology will be put in place

17.3.9 Archaeology and Cultural Heritage

17.3.9.1 Construction Phase

Mitigation

All topsoil stripping will be subject to archaeological monitoring by a qualified archaeologist under licence from National Monuments Service. Where possible topsoil should be stripped using a flat-edged bucket to facilitate the identification of any potential archaeological remains. This is a requirement of the National Monuments Services licencing process. Should any features of archaeological potential be identified, further mitigation may be required in consultation with the National Monuments Service of the Department of Housing, Local Government and Heritage. This may include preservation *in situ* or by record (excavation).

Proposed intervention points along the townland/ parish/ barony boundary forming the eastern perimeter of the site will be fully recorded by photographic and written record, including measured survey of indicative sections, prior to removal at construction phase. Any subsurface remains of the boundaries exposed during topsoil stripping/excavation will be recorded during the programme of archaeological monitoring. In addition, the proposed landscaping scheme will indicate the former alignment of the townland boundaries, where partial removal is required. Furthermore, the retained townland boundaries will be bolstered by additional planting.

The developer has committed to carrying out the above archaeological strategy as part of the proposed development.

Monitoring

No further monitoring mitigation is required.

17.3.9.2 Operational Phase

Mitigation

No mitigation measures during operation are required.

Monitoring

There is no further mitigation required during this phase of works.

17.3.10 Material Assets Traffic

17.3.10.1 Construction Phase

Mitigation

The successful completion of the Proposed Development will require significant coordination and planning, and a comprehensive set of mitigation measures will be put in place before and during the construction phase to minimise the effects of the additional traffic generated by the Proposed Development. The range of measures will include the following which are also set out in the Construction Traffic Management Plan:

- A detailed Construction Traffic Management Plan (CTMP), incorporating all the mitigation measures set out in the TMP submitted as part of the CTMP, will be finalised and agreed with the relevant road authorities and An Garda Síochána prior to construction works commencing on site. The detailed TMP will include the following:

- Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management.

- Communications: Local residents in the area will be informed of any upcoming traffic related matters e.g., temporary lane/road closures (if required), via letter drops and door knocks. In-formation will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or Local Authority during normal working hours. An "out of hours" emergency number will also be provided.

- Travel Plans – Given the site location, the assessment above has assumed the worst case i.e., that construction workers will drive to the site. The Main Contractor will be required to pro-vide a travel plan for construction staff, which will include the identification of routes to / from the site and identification of an area for parking.

Monitoring

The proposed construction material haul routes will be monitored throughout the construction phase to identify any potential damage arising from construction traffic.

To ensure effective monitoring, the Main Contractor, in conjunction with South Dublin County Council, will undertake the following measures:

- Pre-construction condition surveys:

Additional inspections and reviews of the designated haul routes will be undertaken at least one month prior to commencement of construction to record the existing condition of these roads.

- Baseline documentation:

Surveys will include, as a minimum, video footage and photographic records confirming the condition of the carriageway surface, boundary treatments, and any overhead services along the haul routes. Visual inspections and photographic surveys will also be undertaken of bridges and culverts along the haul roads.

- Pavement condition assessment:

Where requested by the Local Authority, a pavement condition survey will be undertaken to establish the baseline structural condition of the haul routes prior to commencement of works.

- Ongoing monitoring and maintenance:

Throughout the construction phase, regular visual inspections will be carried out to identify any deterioration or damage caused by construction traffic. Where such damage occurs, the Local Authority will be notified, and repairs will be arranged promptly to restore the road to an acceptable standard and minimise disruption.

- Post-construction surveys:

Upon completion of the construction phase, the pre-construction condition surveys will be repeated and a comparative assessment undertaken. Where deterioration attributable to construction traffic is identified, appropriate remedial works will be carried out by the Contractor to the satisfaction of the Local Authority.

17.3.10.2 Operational Phase

Mitigation

The mitigation measures proposed for the operational phase are based on the following criteria:

- Severance
- Pedestrian, cyclist and equestrian delay.
- Pedestrian, cyclist and equestrian amenity.
- Fear and intimidation.

Driver and passenger delay

Vehicular access to the development will be via 3 no. access points, as follows: (i) from the north via Carrickmore estate, (ii), to the east via Corbally estate and (iii), to the south via Boherboy Road. The proposed development includes for pedestrian and cyclist connections and accesses to adjoining lands to the north, east and west, and includes for cycling and pedestrian routes and infrastructure throughout the development.

Dedicated infrastructure will be provided for pedestrians, cyclists and other vulnerable road users. Were possible, this infrastructure will separate vehicles from pedestrians, cyclists and other vulnerable road users reducing the possibility of a road traffic collision occurring.

Where vehicles interact with pedestrians, cyclists and other vulnerable road users it will be done in a controlled manner. To that end, the proposed development includes a number of controlled crossings such as the signal-controlled junction from the Link Street to Oldcourt Road and Bohernabreena Road. Along the Link Street, a signal-controlled crossing has also been provided, linking the southern side of the development to the northern side.

Dedicated separated cycle infrastructure is provided along the Link Street with controlled crossings provided to accommodate cycling desire lines including to adjoining developments. Cyclist will share road space in areas of low traffic volume and low speed.

A number of uncontrolled crossings are provided throughout the development for pedestrians. These uncontrolled crossings have been designed to accommodate persons with visual impairments and mobility impairments. Pedestrians are given priority across junctions from the Link Street along the cycle track.

An Outline Travel Plan has been produced for future occupants of the proposed development.

A Travel Plan can be described as a transport demand management mechanism, that seeks to provide for the transportation needs of residents and visitors of the Proposed Development. The aim is to reduce demand for and use of cars by increasing the attractiveness and practicality of other modes of transport.

The Travel Plan includes measures to promote and improve the attractiveness of using public transport, cycling, walking, carsharing, flexible working or a combination of these as alternatives to drive-alone journeys to/from the development.

It should be considered as a dynamic process where a package of measures and campaigns are identified, piloted and monitored on an on-going basis.

The impact of these measures should be reviewed against a set of agreed targets, principally in relation to:

- A reduction in car journeys to and from the work site
- An increase in the number of people who share their journeys by car • A reduction in the need to travel, especially during the rush-hour periods
- Enabling residents and visitors use alternative modes of transport

A Statement of Compliance with DMURS, has been included as part of the planning documentation.

Central to the overall design approach is the need to ensure that pedestrians and cyclists are given the higher priority and more direct linkage than the private car. The proposed site layout and pedestrian and cycle links seek to give connectivity to the wider area to ensure that many local trips can be made using these sustainable travel modes through the provision of access to the canal tow path, which provide linkage to the surrounding area.

Vehicular access to the development shall be provided through a singular entrance and exit to the north-west of the site. Three further vehicle entrance points are located along the southern access road. Access to the site from these points shall be strictly limited to emergency services and maintenance vehicles. A new cycle lane shall run adjacent to the entrance road of the development and shall link Greenhill's Road to the north to the existing southern access road to the south. Design of the cycle infrastructure shall be based on guidance within the National Cycle Manual and DMURS for low speed and low use roads. Ample cycle parking is provided throughout the development.

The Proposed Development has been the subject to a Stage 1/2 Road Safety Audit. Road Safety Audit (RSA) involves the evaluation of road schemes during design and construction to identify potential hazards to all road users. All issues raised and proposed mitigation measures proposed, have been adopted within the development proposals.

Monitoring

Given the nature of the Proposed Development as a residential scheme, no specific traffic monitoring is required during the operational phase beyond that undertaken as part of standard local authority network management and maintenance programmes.

However, any future review of mobility management performance or Travel Plan implementation may include monitoring of mode share, car parking utilisation, and uptake of sustainable transport modes to ensure continued compliance with the National Sustainable Mobility Policy (2022) and DMURS principles.

17.3.11 Material Assets Waste and Utilities

17.3.11.1 Construction Phase

Mitigation

Surface Water

Specific avoidance, remedial and mitigation measures to be taken during the construction phase with respect to surface water drainage are detailed within Chapter 7 Hydrology and Hydrogeology of this EIAR. All works will be carried out in accordance with the Construction and Environmental Management Plan (CEMP) prepared for the Proposed Development and the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). The construction of any watermains infrastructure will be in accordance with Uisce Éireann standards.

Wastewater Drainage

Specific avoidance, remedial and mitigation measures to be taken during the construction phase with respect to foul water are detailed within Chapter 7 Hydrology and Hydrogeology of this EIAR. All works will be carried out in accordance with the Construction and Environmental Management Plan prepared for the Proposed Development and the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). The construction of any wastewater infrastructure will be in accordance with Uisce Éireann standards.

Water Supply

Confirmation of Feasibility has been received by Uisce Eireann. Uisce Éireann have issued a Confirmation of Feasibility letter Ref.CDS24005491 for this planning application noting that the water connection is “feasible without infrastructure upgrade” and the wastewater connection is “feasible subject to upgrades”. (Roger Mullarkey & Associates, 2025)

As part of the previous applications on this site, extensive consultations were held Uisce Éireann, and detailed design and/drawing drawings were submitted and UÉ subsequently confirmed their approval in issuing the Statement of Design acceptance letter (Ref.CDS20004359) dated 19/08/21. (Roger Mullarkey & Associates, 2025)

Further agreements with UÉ will be made at Connection Application stage in relation to this latest planning application on this site. Prior to lodgement of this current application, full submission documentation has been lodged with UÉ regarding the details of the proposed crossing of the trunk watermains which are similar to that previously approved by UÉ. Upon a

successfully grant of planning on the subject site and prior to commencement of development, the Applicants will agree with Uisce Éireann all the necessary protection details as part of the Connection Application process. (Roger Mullarkey & Associates, 2025)

Utilities providers will be responsible for the management and any required upgrades of water supply and as such no mitigation measures are required. (Roger Mullarkey & Associates, 2025)

Electricity

New connections for electricity supply will be coordinated with the relevant utility provider and South Dublin County Council and will be carried out and tested by approved contractors, as per standard protocols and as such no mitigation measures are required.

Gas

There is no gas supply proposed and as such no mitigation measures are required.

Telecommunications

Any new connections required for telecommunications will be coordinated with the relevant utility provider and South Dublin County Council and will be carried out and tested by approved contractors, as per standard protocols and as such no mitigation measures are required.

Waste

The waste management objective will be to prevent waste arising in the first place, and to re-use, recycle or recover waste materials where possible. The following mitigation measures are recommended for the construction phase of the Proposed Development regarding waste management:

- Waste materials will be separated at source and will follow the Resource and Waste Management Plan (RWMP) and Contractor(s) Construction Environmental Management Plan (CEMP);
- Prior to the commencement of the construction phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous;
- A policy of ‘as needed’ ordering and strict purchasing procedures will be implemented to prevent waste arisings as far as possible;
- The Contractor will vet the source of aggregate, fill material and topsoil imported to the site in order to ensure that it is of a reputable origin and that it is “clean” (i.e., it will not contaminate the environment).
- The Contractor and/or Council will implement procurement procedures to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance;
- The waste materials generated during the construction phase will be stored in suitably size receptables and transferred offsite for appropriate processing, recycling and recovery;

- Waste materials generated from the construction phase that are unsuitable for reuse or recovery will be separately collected;
- Disposal of construction generated wastes will be considered a last resort and only after recycling or recovery options have been ruled out;
- A suitably competent and fully permitted waste management company will be employed to manage waste arising for the construction phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO);
- All waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency;
- It is not envisaged that there will be any hazardous waste generated throughout the construction works however, in the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify South Dublin County Council and provide a Hazardous / Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s). Only authorised facilities will be used and as a result of this, the potential effects at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures;
- Waste generated by construction workers will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility; and
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the construction phase.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with provisions of the Waste Management Act 1996, as amended, associated Regulations and Litter Pollution Act 1997, and The National Waste Management Plan for a Circular Economy 2024-2030. The mitigation measures will also ensure optimum levels of waste reduction, reuse, recycling and recover are achieved and will promote more sustainable consumption of resources.

The Contractor will have the responsibility to record resource and waste management at the site in line with the Resource and Waste Management Plan (RWMP). Some of the principal duties and responsibilities of this role include:

- Report to Project Manager on the management of resources and waste at the site;
- Identify all destinations for resources taken off-site;
- Address end-of-waste and by-product notifications with the EPA, where applicable;

- Maintain full records of all resources (both wastes and other resources) for the duration of the project;
- Delegate responsibility to sub-contractors, where necessary;
- Coordinate with suppliers, service providers and sub-contractors; and
- Prioritise waste prevention and resource salvage.

Monitoring

The site control measures to manage and minimise waste include:

- Signage on the site office/welfare bins to separate them as environmental/domestic waste bins; and
- Briefing for all sub-contractors via induction handouts.

During the construction phase, a procedure for waste auditing will be in place as per the RWMP which has been prepared for the planning application and is submitted under separate cover. The purpose of the waste auditing is to identify any problems with the site's waste procedures and also the benefits of prevention and minimisation that is in place. The audit will be a 'self-audit' process carried out by the Resource Manager (RM) and/or appointed team member/contractor. The RM will create an Audit Plan and identify the appropriate frequency at which the audits are to be conducted over the course of the construction phase. The waste audit will document details of the quantity, type and composition of all waste removed from the site. The audit findings will highlight any corrective actions that may need to be taken in relation to waste management procedures or site practices. These corrective actions will be tracked in order to identify root- causes as appropriate (DNV, 2025).

17.3.11.2 Operational Phase

Mitigation

Surface Water

Due to the incorporated design measures relating to surface water, no additional mitigation measures are required. Following planning application stage, connection agreements will be made with Uisce Éireann to ensure water supply to the site and foul water discharge off site and no additional mitigation measures will be required.

Wastewater Drainage

Due to the incorporated design measures relating to foul / wastewater, no additional mitigation measures are required. Following planning application stage, connection agreements will be made with Uisce Éireann to ensure water supply to the site and foul water discharge off site and no additional mitigation measures will be required.

Water Supply

Confirmation of Feasibility has been received by Uisce Eireann. Utilities providers will be responsible for the management and any required upgrades of water supply and as such no mitigation measures are required.

Electricity

Utilities providers will be responsible for the management and any required upgrades of electricity supply and as such no mitigation measures are required.

Gas

There is no gas supply proposed and as such no mitigation measures are required.

Telecommunications

Utilities providers will be responsible for the management and any required upgrades of telecommunications and as such no mitigation measures are required.

Waste

As previously stated, an Operational Waste Management Plan (OWMP) has been prepared by DNV (2025) for the Proposed Development. A waste strategy is presented in the OWMP which considers legal requirements, policies, and best management guidelines. This plan also demonstrates that the Waste Storage Area (WSA) has been incorporated within the design of the Proposed Development.

Implementation of the OWMP will ensure that a high level of recycling, reuse, and recover at the Proposed Development during the operational phase. All materials that are considered recyclable will be segregated and separated at source to reduce costs from the waste collector and ensure maximum diversion of material from landfill. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated WSA will provide sufficient room for the required receptacles in accordance with the details of this strategy.

As outlined in the OWMP, it is intended to ensure that the highest possible levels of waste reduction, waste reuse and waste recycling are achieved for the Proposed Development. Specifically, the OWMP will aim to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible.

It will be a condition of any management contract at the development that adequate budgets are in place for the provision of all required waste management services including a four-bin system for the collection of separate Organic (food) Waste, Dry Mixed Recyclables (DMR), Mixed Municipal Waste (MMW) / General Waste and Glass from the apartments and duplexes.

The Management Company appointed will be required to continually monitor the performance of the waste management system. This will include routine visual checks of the WSAs to ensure that all bins collected are returned to the WSAs and to ensure this area is maintained so as not to cause any environmental nuisance to residents. These checks will also assess if the bins are in good condition or need to be replaced where damage is identified.

Provision for bin cleaning will be included in the contract with the waste management contractor appointed to ensure the provision of bin cleaning services or replacement of clean bins by the waste contractor.

The Management Company will review all annual waste reports from the Waste Collection Company appointed to ensure that the waste collected is in line with the European recycling targets. Where poor recycling rates are noted information leaflets will be recirculated to all residents which will include information on what materials can be recycled and the waste streams that can be placed in bins. Residents will also be reminded of legal obligations where

applicable. Further communication strategy to engage tenants and owner occupiers in good waste management practices will be adopted if deemed necessary.

Contingency policies will be in place to ensure continuity of service.

Each appointed Waste Contractor must hold a valid waste collection permit to transport waste which is issued by the National Waste Collection Permit Office (NWCPO). Waste treatment facilities must also be appropriately permitted (Waste Facility Permit or Certificate of Registration) or licensed by the Local Authority or Environmental Protection Agency to accept the waste. The Management Company appointed will be responsible for ensuring that all Waste Contractors hold the appropriate authorisations.

The OWMP has reviewed policy alongside best practice guidance and recommendations for sustainable waste and recycling management arrangements for the Proposed Development and ensures a high level of recycling, reuse and recovery at the development and also ensures that waste management is carried out in accordance with the requirements of the South Dublin County Development Plan 2022-2028 and Ireland's National Waste Policy.

Monitoring

The building management company and future residents will be required to maintain the bins and storage areas in good condition. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

17.4 Conclusion

The mitigation and monitoring measures outlined in this chapter provide a comprehensive framework to minimize potential environmental impacts during both construction and operational phases. These measures ensure compliance with regulatory requirements and promote best practice standards across all relevant disciplines. Ongoing monitoring will verify the effectiveness of mitigation actions and support adaptive management where necessary to safeguard environmental quality.

About DNV

DNV is the independent expert in risk management and assurance, operating in more than 100 countries. Through its broad experience and deep expertise DNV advances safety and sustainable performance, sets industry benchmarks, and inspires and invents solutions.

Whether assessing a new ship design, optimizing the performance of a wind farm, analyzing sensor data from a gas pipeline or certifying a food company's supply chain, DNV enables its customers and their stakeholders to make critical decisions with confidence.

Driven by its purpose, to safeguard life, property, and the environment, DNV helps tackle the challenges and global transformations facing its customers and the world today and is a trusted voice for many of the world's most successful and forward-thinking companies