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ENVIRONMENTAL IMPACT ASSESSMENT REPORT VOLUME II MAIN REPORT

In respect of lands at
Flemington South LRD

Prepared on behalf of
Glenveagh Homes Ltd.

December 2025

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Arboricultural Report – Charles McCorkell

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GLOSSARY OF TERMS¹

Alternatives: A description of other options that may have been considered during the conception of a project; these include alternative locations, alternative designs and alternative processes.

Baseline Scenario: The current state of environmental characteristics – including any evident trends in its status.

Competent Authority (CA): The term ‘competent authority’ means the Minister or public authority to which an EIAR is required to be submitted, i.e. the authority charged with examining an EIAR with a view to issuing a consent to develop or operate.

Development: A project involving new works [including alteration and/or demolition] or altered patterns of activity.

‘Do-nothing’ Scenario: The situation or environment which would exist if a proposed, development, project or process were not carried out. This scenario needs to take account of the continuation or change of current management regimes, as well as the continuation or change of trends currently evident in the environment.

Effect / Impact: A change resulting from the implementation of a project.

Environmental Impact Assessment – EIA: The process of examining the anticipated environmental effects of a proposed project – from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR), evaluation of the EIAR by a competent authority, and the subsequent decision as to whether the project should be permitted to proceed, encompassing public response to that decision.

Environmental Impact Assessment Report – EIAR: A report or statement of the effects, if any, that the proposed project, if carried out, would have on the environment. EPA The Environmental Protection Agency.

Impact / Effect: A change resulting from the implementation of a project

Impact Avoidance: The modification of project decisions (about site location or design, for example) having regard to predictions about potentially significant environmental effects.

Infrastructure: The basic structure, framework or system which supports the operation of a project, for example roads and sewers, which are necessary to support development projects.

Land Use: The human activities which take place within a given area of space.

Likely Effects (or Likely Impacts): The effects that are specifically predicted to take place – based on an understanding of the interaction of the proposed project and the receiving environment. (See also Potential Effects and Residual Effects.)

Methodology: The specific approach or techniques used to analyse impacts or describe environments.

Mitigation Measures: Measures designed to avoid, prevent or reduce impacts. These measures can mitigate impacts: \ by Avoidance When no impact is caused (often through consideration of alternatives).

¹ Selected – From Guidelines on the information to be contained in Environmental Impact Assessment Reports – EPA, May 2022

\ by Prevention When a potential impact is prevented by a measure to avoid the possibility of the impact occurring. \ by Reduction When an impact is lessened.

Monitoring: The observation, measurement and evaluation of environmental data to follow changes over a period of time, to assess the efficiency of control measures and to record any unforeseen effects in order to be able to undertake appropriate remedial action. This is typically a repetitive and continued process carried out during construction, operation or decommissioning of a project.

Pathway: The route by which an effect is conveyed between a source and a receptor.

Planning Application Report: Documentation that accompanies the planning application which describes the conformity of the proposal with relevant legislation and planning matters – such as the County, City or Local Area Plans – and sectoral policies, as well as social and economic activity.

Pollution: Any release to the environment which has a subsequent adverse effect on the environment or man.

Potential Effect/ Impact: The effect / impact that would occur without mitigation.

Processes: The activities which take place within a project.

Project: For the purposes of the Guidelines, the term project is used to encompass all of the various forms of development, works and activity which are subject to EIA requirements, as set out in the relevant legislation and as understood by the Directive.

Sensitivity: The potential of a receptor to be significantly affected. Significance (of impact) The importance of the outcome of the impact (or the consequence of change) for the receiving environment. Source The activity or place from which an effect originates.

LIST OF ABBREVIATIONS

AA	Appropriate Assessment
ACP	An Coimisiún Pleanála
CDP	County Development Plan
CEMP	Construction Environmental Management Plan
CSO	Central Statistics Office
DAHG	Department of Arts, Heritage and the Gealtacht
DCENR	Department of Communications, Energy and Natural Resources
DEHLG	Department of Housing, Planning and Local Government
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ESRI	Economic and Social Research Institute
FCC	Fingal County Council
FMP	Forest Management Plan
GDP	Gross Domestic Product

GSI Geology Survey Ireland
 IAA Irish Aviation Association
 IDR Infrastructure Design Report
 IEEM Institute of Ecology and Environmental Management
 IFI Inland Fisheries Ireland
 NHA/pNHA Natural Heritage Area / proposed Natural Heritage Area
 NIAH National Archive of Architectural Heritage
 NPWS National Parks and Wildlife Service
 NRA National Roads Authority
 NPF National Planning Framework
 NTS Non-Technical Summary
 OPW Office of Public Works
 RMP Record of Monuments and Places
 RPS Record of Protected Structures
 SAC Special Area of Conservation
 SMR Sites and Monuments Record
 SPA Special Protection Area
 SUDS Sustainable Drainage System
 TMP Traffic Management Plan
 WFD Water Framework Directive

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1.0 INTRODUCTION AND METHODOLOGY

John Spain Associates, Planning & Development Consultants, have been commissioned by Glenveagh Homes Ltd., Block C, Maynooth Business Campus, Straffan Road, Maynooth, County Kildare, to prepare an Environmental Impact Assessment Report (EIAR) relating to a project for the construction of 815 no. dwellings, provision of the C-Ring Road between Flemington Lane and the Clonard Road roundabout, open space, community floorspace (c. 730 sq. m) in a 2 storey building, retail floorspace (c. 419 sq. m) at ground floor of Block F, and 2 no. creches (overall combined c. 1,060 sq. m) on an overall site area of 24.91 hectares comprising 610 no. houses, 194 apartments & 11 no. later living dwellings. The development will also include Class 1 open space in the western portion of the development (2.39 hectares) as well as a series of public open spaces throughout the site comprising 2.87 ha., car parking, cycle parking and all ancillary site development, construction, and landscaping works.

This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates.

Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 23 years of experience of Environmental Impact Assessment and urban development.

Rory has acted as lead planning consultant on a range of high-quality complex planning applications across the country over an extended period. Rory has wide-ranging experience in the management and review of Environmental Impact Assessment Reports (EIAR) for major residential and mixed-use development and redevelopment projects.

The central purpose of the Environmental Impact Assessment Report (EIAR) is to undertake an appraisal of the likely and significant impacts on the environment of the proposed development in parallel with the project design process, and to document this process in the EIAR. This is then submitted to the competent/consent authority to enable it to assess the likely significant effects of the project on the environment.

A full description of the proposed development lands together with a description of the proposed development is provided in Chapter 2 of this EIAR document.

This EIAR document has been prepared in accordance with Directive 2011/92/EU of the European Parliament and Council of the 13th December 2011 on the assessment of the effects of certain public and private projects on the environment (codification) as amended by Directive 2014/52/EU of the European Parliament and Council of the 16th April 2014 (**'the EIA Directives'**), as well as relevant national implementing legislation, i.e. Part X of the Planning and Development Act 2000, as amended (**'the 2000 Act'**), and Part 10 of the Planning and Development Regulations 2001, as amended, (**'the 2001 Regulations'**). A description of the methodological approach to the preparation of this EIAR is provided in the following sections of this chapter. A description of the methodological approach to the preparation of this EIAR is provided in the following sections of this chapter.

1.1 EIA LEGISLATION, DEFINITION OF EIA AND EIAR

Certain public and private projects that are likely to have significant effects on the environment are subject to EIA requirements derived from the codified European Union Directive 2011/92/EU as amended by Directive 2014/52/EU (EIA Directive). The purpose of these Directives to ensure that projects likely to have significant effects on the environment are subject to a comprehensive and systematic assessment of environmental effects prior to development consent being given.

Directive 2014/52/EU defines '*environmental impact assessment*' as a process, which includes the responsibility of the developer to prepare an Environmental Impact Assessment Report (EIAR), and the

responsibility of the competent authority to provide reasoned conclusions following the examination of the EIAR and other relevant information.

Article 1(2)(g) of Directive 2011/92/EU, as amended by the 2014 Directive states that “*environmental impact assessment*” means a process consisting of:

- “(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);
- (ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;
- (iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;
- (iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and
- (v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a.”

A definition of “*environmental impact assessment*” is also contained under Section 171A of the 2000 Act, as amended as follows:

‘environmental impact assessment’ means a process—

(a) consisting of—

- (i) the preparation of an environmental impact assessment report by the applicant in accordance with this Act and regulations made thereunder,
- (ii) the carrying out of consultations in accordance with this Act and regulations made thereunder,
- (iii) the examination by the planning authority or the Board, as the case may be, of—
 - (I) the information contained in the environmental impact assessment report,
 - (II) any supplementary information provided, where necessary, by the applicant in accordance with section 172(1D) and (1E), and
 - (III) any relevant information received through the consultations carried out pursuant to subparagraph (ii),
- (iv) the reasoned conclusion by the planning authority or the Board, as the case may be, on the significant effects on the environment of the proposed development, taking into account the results of the examination carried out pursuant to subparagraph (iii) and, where appropriate, its own supplementary examination, and
- (v) the integration of the reasoned conclusion of the planning authority or the Board, as the case may be, into the decision on the proposed development, and

(b) which includes—

(i) an examination, analysis and evaluation, carried out by the planning authority or the Board, as the case may be, in accordance with this Part and regulations made thereunder, that identifies, describes and assesses, in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the proposed development on the following:

- (I) population and human health;
 - (II) biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;
 - (III) land, soil, water, air and climate;
 - (IV) material assets, cultural heritage and the landscape;
 - (V) the interaction between the factors mentioned in clauses (I) to (IV),
- and

(ii) as regards the factors mentioned in subparagraph (i)(I) to (V), such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of

the proposed development to risks of major accidents or disasters, or both major accidents and disasters, that are relevant to that development;

The amended Directive (Directive 2014/52/EU) uses the term environmental impact assessment report (EIAR) rather than environmental impact statement (EIS). Where current national guidelines and regulations refer to an environmental impact statement or an EIS, this can be taken to be the same as an environmental impact assessment report (EIAR).

A definition of Environmental Impact Assessment Report (EIAR) has not been included in the revised directive. However, the EPA Guidelines (2022)² (and the Planning and Development Act 2000 as amended) provide the following definition:

"A report or statement of the effects, if any, that the proposed project, if carried out, would have on the environment."

The information to be included in an EIAR is specified in Article 5(1) and Annex IV of the EIA Directives (see section 1.7 below for more). The EIAR is prepared by the developer (in this instance Glenveagh Homes Ltd.) and is submitted to a Competent Authority (CA) (in this instance Fingal County Council) as part of a consent process.

The CA uses the information provided to assess the environmental effects of the project and, in the context of other considerations, to inform its decision as to whether consent should be granted. The information in the EIAR is also used by other parties to evaluate the acceptability of the project and its effects and to inform their submissions to the CA.

The EIAR presents a systematic analysis and evaluation of the potentially significant effects of a proposed project on the receiving environment. Article 3 of the amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment, and which must be addressed in the EIAR:

"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:

population and human health;

biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

land, soil, water, air and climate;

material assets, cultural heritage and the landscape; the interaction between the factors referred to in points (a) to (d)."

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

Where significant and likely environmental effects are identified, the EIA process aims to quantify and minimise the impact development projects have on the environment through appropriate mitigation measures. The preparation of an EIAR requires site-specific considerations and the preparation of baseline assessment against which the likely impacts of a proposed development can be assessed by way of a concise, standardised and systematic methodology.

² Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022

EIA practice has evolved substantially since the introduction of the EIA Directive in 1985. Practice continues to evolve and takes into account the growing body of experience in carrying out EIARs in the development sector. Table 1.1 sets out the relevant key EIA Guidance which has been consulted in the preparation of this EIAR document. In addition, the individual chapters of this EIAR should be referred to for further information on the documents consulted by each competent expert.

We would also note that the pre-application discussions with the Planning Authority informed the content of the EIAR.

Table 1.1: EIA Guidelines Consulted as Part of the Preparation of this EIAR

Irish	
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022 - Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018 - Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems - Key Issues Consultation Paper, Department of Housing, Planning, Community and Local Government, 2017. - Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (2017). - Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoECLG, March 2013). - Development Management Guidelines (DoEHLG, 2007). - Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003). - Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003).	
European Union (in addition to Directives referenced above)	
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017 - Environmental Impact Assessment of Projects Guidance on Screening (2017). - Environmental Impact Assessment of Projects Guidance on Scoping (2017). - EU Commission Notice on changes and extensions to projects (2021) - Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 2002).	

The content of this Environmental Impact Assessment Report has been prepared in accordance with the provisions of Article 5(1) and Annex IV of Directive 2014/52/EU and Article 94 and Schedule 6 the 2001 Regulations as amended.

1.2 EIA PROCESS OVERVIEW

The main purpose of the EIA process is to identify, describe and assess the direct and indirect significant impacts of the proposed project on the environment, and specifically 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; the interaction between the factors referred to in points (a) to (d)."

The EIAR presents the results of the analysis and assessment of the significant effects of the proposed development on the receiving environment undertaken by the competent experts appointed by the developer to prepare the EIAR and sets out measures to be incorporated into the project to eliminate or minimise these impacts. .

Several interacting steps typify the early stages of the EIA process and include:

- Screening;

- Scoping;
- Assessing Alternatives; and
- Assessing and Evaluating.

Screening: Screening is the term used to describe the process for determining whether a proposed development requires an EIA.

Scoping: This stage firstly identifies the extent of the proposed development and associated site, which will be assessed as part of the EIA process, and secondly, it identifies the environmental issues likely to be important during the course of completing the EIA process having regard to the nature of the proposed development and the receiving environment and through consultation with statutory and non-statutory stakeholders. Scoping request letters were issued to a range of stakeholders at the commencement of this EIA process and the responses received have been considered as part of the compilation of the EIAR.

Assessing Alternatives: This stage describes the reasonable alternative approaches to the proposed development and sets out the main reasons for the chosen approach having regard to the effects of the respective alternatives on the environment. Consideration of alternatives is set out in Chapter 2 of this EIAR.

Assessing and Evaluating: The central steps of the EIA process include baseline assessment (desk study and field surveys) to determine the status of the existing environment, impact prediction and evaluation, and determining appropriate mitigation measures where necessary. This stage of the EIAR is presented in Chapters 3 to 15.

1.3 SCREENING – REQUIREMENT FOR EIA

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

Annex I of the EIA Directive 85/337/EC requires as mandatory the preparation of an EIA for all development projects listed therein.

Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case-by-case basis for certain classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA.

Projects needing environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001 (as amended). Schedule 5 (Part 2) of the Planning & Development Regulations 2001 (as amended) set mandatory thresholds for each project class.

Paragraph 10((b)(i) refers to Infrastructure projects comprising the construction of more than 500 dwelling units. The proposed development which comprises 815 no. dwellings is above the mandatory threshold.

Paragraph 10(b)(iv) refers to 'Urban development which would involve an area greater than 2 hectares in the case of business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.' The site is c. 24.91 hectares which is above the mandatory threshold for EIA.

Paragraph 13 (a) refers to changes and extensions to development already authorised, which would result in an increase of 25% or 50 % of the appropriate threshold whichever is greater, in respect of a previous EIAR development.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the project and proposes mitigation measures to avoid or reduce these effects. The function of the EIAR

is to provide information to allow the competent authority to conduct the Environmental Impact Assessment (EIA) of the proposed development.

1.4 SCOPING

The EPA Guidelines state that ‘*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 the EC guidance³ as:

“The process of identifying the content and extent of the information to be submitted to the Competent Authority under the EIA process.”

The EIAR team has extensive professional experience on undertaking similar EIAR projects on similar sites and elsewhere over an extended period.

The provisions included in the revised EIA Directive and all of the issues listed in Schedule 6, Sections 1, 2 and 3 of the Planning and Development Regulations 2001 (as amended) and in recent guidance documents have been addressed in the EIAR.

In this context the following topics/issues have been reviewed and addressed in the context of the proposed development:

- Introduction and Methodology,
- Project Description and Alternatives Examined,
- Population and Human Health,
- Biodiversity,
- Land and Soils,
- Water,
- Air Quality,
- Climate,
- Noise and Vibration,
- Landscape and Visual Impact,
- Material Assets - Traffic,
- Material Assets - Waste
- Material Assets - Utilities,
- Cultural Heritage – Archaeology and Architectural Heritage,
- Risk Management for Major Accidents and or Disasters,
- Interactions of the Foregoing,
- Cumulative and Related Development,
- Summary of EIA Mitigation and Monitoring Measures,
- Non-Technical Summary.

In addition to the above a series of standalone reports have been prepared to accompany the application and which have helped inform the above chapters of the EIAR where relevant. Chapter 2 provides details of the envisaged phased delivery of development on the lands.

In addition, consultation has taken place with the technical staff of Fingal County Council, and a consultation meeting has taken place between the Applicant.

Furthermore, JSA sent scoping letters on the 25th of September to the following:

³ Environmental Impact Assessment of Projects Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)

Inland Fisheries Ireland, NPWS, NTA, OPW, TII, and Uisce Eireann (as outlined in Appendix B Volume III of the EIAR). Responses have been taken into account in the preparation of the EIAR chapters, where relevant.

1.5 INFORMATION TO BE CONTAINED IN AN EIAR

The content of this Environmental Impact Assessment Report has been prepared in accordance with the provisions of Article 5(1) and Annex IV of Directive 2014/52/EU. Article 5(1) states:

“The information to be provided by the developer shall include at least:

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

Annex IV states:

“1. A Description of the project, including in particular:

- (a) a description of the location of the project;
- (b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
- (c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;
- (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.

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

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the project on the environment resulting from, inter alia:
- (a) the construction and existence of the project, including, where relevant, demolition works;
 - (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
 - (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

- (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
- (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
- (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;
- (g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

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

9. A non-technical summary of the information provided under points 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the report.”

Article 94 and Schedule 6 of the Planning and Development Regulations 2001, as amended, transpose into Irish law the EIA Directive requirements in relation to information to be contained in an EIAR.

Article 94 states:

“An EIAR shall take into account the available results of other relevant assessments under European Union or national legislation with a view to avoiding duplication of assessments and shall contain——

- (a) the information specified in paragraph 1 of Schedule 6,
- (b) any additional information specified in paragraph 2 of Schedule 6 relevant to the specific characteristics of the development or type of development concerned and to the environmental features likely to be affected, and methods of assessment,
- (c) a summary in non-technical language of the information required under paragraphs (a) and (b),
- (d) a reference list detailing the sources used for the descriptions and assessments included in the report, and
- (e) a list of the experts who contributed to the preparation of the report, identifying for each such expert—
 - (i) the part or parts of the report which he or she is responsible for or to which he or she contributed, (ii) his or her competence and experience, including relevant qualifications, if any, in relation to such parts, and (iii) such additional information in relation to his or her expertise that the person or persons preparing

the EIAR consider demonstrates the expert's competence in the preparation of the report and ensures its completeness and quality."

Schedule 6 provides for the following information to be furnished:

1. (a) A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development.
(b) A description of the likely significant effects on the environment of the proposed development.
(c) A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development.
(d) A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment.
2. Additional information, relevant to the specific characteristics of the development or type of development concerned and to the environmental features likely to be affected, on the following matters, by way of explanation or amplification of the information referred to in paragraph 1:
 - (a) a description of the proposed development, including, in particular—
 - (i) a description of the location of the proposed development,
 - (ii) a description of the physical characteristics of the whole proposed development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases,
 - (iii) a description of the main characteristics of the operational phase of the proposed development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used, and
 - (iv) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases;
 - (b) a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;
 - (c) a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without the development 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;
 - (d) a description of the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment' in section 171A of the Act likely to be significantly affected by the proposed development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape;
 - (e) (i) a description of the likely significant effects on the environment of the proposed development resulting from, among other things—
 - (I) the construction and existence of the proposed development, including, where relevant, demolition works,

- (II) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources,
- (III) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste,
- (IV) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters),
- (V) the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources,
- (VI) the impact of the proposed development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the proposed development to climate change, and
- (VII) the technologies and the substances used, and
- (ii) the description of the likely significant effects on the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment' in section 171A of the Act should cover the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium-term and long-term, permanent and temporary, positive and negative effects of the proposed development, taking into account the environmental protection objectives established at European Union level or by a Member State of the European Union which are relevant to the proposed development;
- (f) a description of the forecasting methods or evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved;
- (g) a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development;
- (h) 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 IV of the EIA Directive and Article 94 of the 2001 Regulations, also require that the EIAR shall, with a view to avoiding duplication of assessments, take into account the available results of other relevant assessments under Union or national legislation. The available result of other such assessments, where relevant, have been considered in each of the chapters.

The likely significant effects in this EIAR are, unless otherwise indicated in a particular Chapter, described using the terminology in Table 3.4 in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022 (the EPA Guidelines 2022), which are presented in the Table below. The use of these terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across most disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the proposed development on the receiving environment.

Table 1.2: Description of Effects

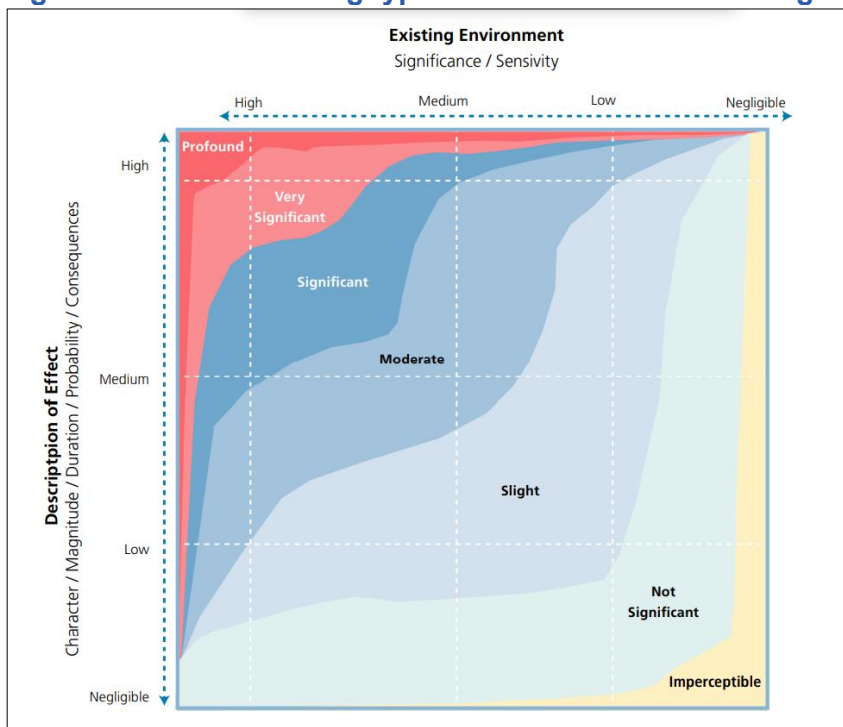
Quality of Effects	Definition
Negative /Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive	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).
Significance of Effects on the Receiving Environment	Description of Potential Effects
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Extent and Context of Effects	Describing the Extent and Context of Effects
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.
Probability of Effects	Describing the Probability of Effects
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.
Duration of Impact	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

Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Types of Effect	Describing the Types of Effects
Indirect Effects (a.k.a. Secondary 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	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 SO _x and NO _x to produce smog).

Source: Table 3.4 EPA Guidelines 2022

The diagram below shows how comparison of the character of the predicted impact to the sensitivity of the receiving environment can determine the significance of the impact.

Figure 1.1: Chart showing typical classifications of the significance of impacts



Source: Figure 3.4 of EPA Guidelines 2022

1.6 PURPOSE OF THIS EIAR

The EPA Guidelines 2022 state that the main purpose of an EIAR 'is to identify, describe and present an assessment of the likely significant effects of a project on the environment'. This informs the competent

authority's assessment process, its decision on whether to grant consent for a project and, if granting consent, what conditions to attach. The EIAR focuses on:

- *effects that are both likely and significant; and;*
- *description of effects that are accurate and credible.*

In addition to identifying and predicting the likely predicted significant environmental impacts resulting from the proposed development, the EIAR should describe the means and extent by which they can be reduced or ameliorated, to interpret and communicate information about the likely impacts and to provide an input into the decision making and planning process.

The EIAR documents the consideration of environmental effects that influenced the evaluation of alternatives. It also documents how the selected project design incorporates mitigation measures; including impact avoidance, reduction or amelioration; to explain how significant adverse effects will be avoided.

It is intended that this EIAR will assist Fingal County Council (the competent authority) statutory consultees and the public in assessing all aspects of the application proposals.

1.7 OBJECTIVES OF THIS EIAR

The EPA guidelines (2022) list the following fundamental principles to be followed when preparing an EIAR:

- Anticipating, predicting, avoiding and reducing significant effects;
- Assessing and mitigating effects;
- Maintaining objectivity;
- Ensuring clarity and quality;
- Providing relevant information to decision makers; and
- Facilitating better consultation.

The amended EIA Directive prescribes a range of environmental factors which are used to organise descriptions of the environment and the environmental impact assessment should 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 prescribed environmental factors which are:

- (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).

This EIAR documents the analysis, evaluation and assessment of the likely significant effects of the proposed mixed-use development at Emmet Road, Inchicore, Dublin 8 on each of these environmental factors.

Pursuing preventative action is the most effective means by which potential negative environmental impacts can be avoided. Avoidance of impacts has been principally achieved through the consideration of alternatives and through the review of the project design in light of identified key environmental constraints. This is outlined in greater detail in Chapter 2.

The EIAR document enables Fingal County Council, as competent authority, to reach a decision on the acceptability of the proposed development in the full knowledge of the project's likely significant impacts on the environment, if any.

Decisions are taken by competent/consent authorities through the statutory planning process which allows for public participation and consultation while receiving advice from other key stakeholders and statutory authorities with specific environmental responsibilities.

The structure, presentation and the non-technical summary of the EIAR document 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 any likely environmental impacts of projects prior to the granting of consent.

1.8 FORMAT AND STRUCTURE OF THIS EIAR

The structure of the EIAR is laid out in the preface of each volume for clarity. It consists of three volumes as follows:

- Volume I: Non-Technical Summary

This is a non-technical summary of the information contained within Volume II.

- Volume II: Environmental Impact Assessment Report.

This is the main volume of the EIAR. It provides information on the location and scale of the proposed development, details on design and impacts on the environment (both positive and negative) as a result of the proposed development.

Each of the environmental aspects as listed below are examined in terms of the existing or baseline environment, identification of potential construction and operational stage impacts and where necessary proposed mitigation measures are identified. The interaction of the environmental aspects with each other is also examined. Each chapter below includes an assessment of potential cumulative impacts with other existing and planned developments, where relevant. Environmental aspects considered include:

Chapter 3	Population and Human Health;
Chapter 4	Biodiversity;
Chapter 5	Land and Soils;
Chapter 6	Water;
Chapter 7	Air Quality;
Chapter 8	Climate;
Chapter 9	Noise and Vibration;
Chapter 10	Landscape & Visual;
Chapter 11	Material Assets – Traffic;
Chapter 12	Material Assets – Utilities;
Chapter 13	Material Assets - Waste Management;
Chapter 14	Cultural Heritage – Local History, Archaeology;
Chapter 15	Risk Management for Major Accidents and or Disasters;
Chapter 16	Interactions of the Foregoing;
Chapter 17	Cumulative Assessment
Chapter 18	Summary of EIA Mitigation and Monitoring Measures;

- Volume III: Technical Appendices

Volume III contains specialists' technical data and other related reports.

1.8.1 EIAR VOLUME II STRUCTURE

The preparation of an EIAR document requires the assimilation, co-ordination, and presentation of a wide range of relevant information in order to allow for the overall assessment of a proposed development. For clarity and to allow for ease of presentation and consistency when considering the various elements of the proposed development, a systematic structure is used for the main body of this EIAR document.

The structure used in this EIAR document is a Grouped Format structure. This structure examines each environmental topic⁴ in a separate chapter of this EIAR document. The structure of the EIAR document is set out in Table 1.3 below.

Table 1.3: Structure of this EIAR

Chapter	Title	Content
1	Introduction and Methodology	Sets out the purpose, methodology and scope of the document.
2	Project Description and Alternatives Examined	Sets out the description of the site, design and scale of development, considers all relevant phases from construction through to existence and operation together with a description and evaluation of the reasonable alternatives studied by the developer including alternative locations, designs and processes considered; and a justification for the option chosen taking into account the effects of the project on the environment.
3	Population and Human Health	Describes the demographic and socio-economic profile of the receiving environment and potential impact of the proposed development on population, i.e. human beings, and human health.
4	Biodiversity	Describes the existing ecology on site and in the surrounding catchment and assesses the potential impact of the proposed development and mitigation measures incorporated into the design of the scheme and includes mitigation measures.
5	Land and Soils	Provides an overview of the baseline position, the potential impact of the proposed development on the site's soil and geology and impacts in relation to land take and includes mitigation measures.
6	Water	Provides an overview of the baseline position, the potential impact of the proposed development on water quality and quantity and includes mitigation measures.
7	Air Quality	Provides an overview of the baseline air quality environment, the potential impact of the proposed development and includes mitigation measures.
8	Climate	Provides an overview of the baseline climatic environment, the potential impact of the proposed development, the vulnerability of the project to climate change, and includes mitigation measures.
9	Noise and Vibration	Provides an overview of the baseline noise environment, the potential impact of the proposed development and includes mitigation measures.
10	Landscape & Visual Impact	Provides an overview of the baseline position, the potential impact of the proposed development on the landscape appearance and character and visual environment and includes mitigation measures.
11-13	Material Assets	Describes the existing traffic, waste management and utilities/services and infrastructural requirements of the proposed development and the likely impact of the

⁴ In some instances similar environmental topics are grouped.

Chapter	Title	Content
		proposed development on material assets and includes mitigation measures.
14	Archaeology and Architectural and Cultural Heritage	Provides an assessment of the site and considers the potential impact of the proposed development on the local archaeology, architectural and cultural heritage; and includes mitigation measures.
15	Risk Management	Provides a review of the potential vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned
16	Interactions of the Foregoing	Describes the potential interactions and interrelationships between the various environmental factors.
17	Cumulative Assessment	Describes the potential cumulative impacts of the project in conjunction with other relevant projects in the vicinity of the subject lands.
18	Summary of Mitigation and Monitoring Measures	Sets out the key mitigation and monitoring measures included in the EIAR Document for ease of reference.

This systematic approach described above employs standard descriptive methods, replicable assessment techniques and standardised impact descriptions to provide an appropriate evaluation of each environmental topic under consideration. An outline of the methodology employed consistently in each chapter to examine each environmental topic is provided below:

Table 1.4: Methodology Employed to Evaluate Environmental Topic

Chapter Structure
Introduction:
Study Methodology:
The Existing Receiving Environment (Baseline Situation):
Do Nothing Scenario:
Characteristics of the Proposed Development:
Potential Impact of the Proposed Development:
Avoidance, Remedial and Mitigation Measures: Avoidance:
Predicted Impacts of the Proposed Development (Assessing the significance of residual effects, taking account of any mitigation measures):
Monitoring:
Reinstatement:
Interactions
Cumulative Impacts:
Difficulties Encountered in Compiling:
References.

1.9 EIAR PROJECT TEAM

1.9.1 EIAR PROJECT MANAGEMENT

The preparation of this EIAR was project managed, co-ordinated and produced by John Spain Associates. John Spain Associates role was to liaise between the design team and various environmental specialist consultants. John Spain Associates were also responsible for editing the EIAR document to ensure that it is cohesive and not a disjointed collection of disparate reports by various environmental specialists. John Spain Associates does not accept responsibility for the input of the competent specialist consultants or the design team.

1.9.2 EIAR COMPETENT EXPERTS/ENVIRONMENTAL SPECIALISTS

Recital 33 of the amended EIA Directive (Directive 2014/52/EU) states the following in relation to the persons responsible for preparing the environmental impact assessment reports:

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

Article 5(3) of the EIA Directive (Directive 2014/52/EU) obliges the project developer to *"ensure that the environmental impact assessment report is prepared by competent experts"*. To demonstrate compliance with this, Article 94(e) of the Planning and Development Regulations 2001 to 2021 requires the developer to include the following information in the EIAR:

a list of the experts who contributed to the preparation of the report, identifying for each such expert—

- (i) the part or parts of the report which he or she is responsible for or to which he or she contributed,
- (ii) his or her competence and experience, including relevant qualifications, if any, in relation to such parts, and
- (iii) such additional information in relation to his or her expertise that the person or persons preparing the EIAR consider demonstrates the expert's competence in the preparation of the report and ensures its completeness and quality.

Each environmental specialist engaged in the preparation of this EIAR was commissioned having regard to their previous experience in EIA; their knowledge of relevant environmental legislation relevant to their topic; familiarity with the relevant standards and criteria for evaluation relevant to their topic; ability to interpret the specialised documentation of the construction sector and to understand and anticipate how their topic will be affected during construction and operation phases of development; ability to arrive at practicable and reliable measure to mitigate or avoid adverse environmental impacts; and to clearly and comprehensively present their findings.

Each environmental specialist was required to characterise the receiving baseline environment; evaluate its significance and sensitivity; predict how the receiving environment will interact with the proposed development and to work with the EIA project design team to devise measures to mitigate any adverse environmental impacts identified.

The relevant specialist consultants who contributed to the EIAR and their inputs are set out in Table 1.5 below an relevant chapters.

Table 1.5: EIAR List of Competent Experts

Organisation	EIAR Specialist Topics / Inputs
John Spain Associates, Planning & Development Consultants, 39 Fitzwilliam Place, Dublin 2, D02 ND61 T: 01 662 5803 Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt	Introduction and Methodology Project Description and Alternatives Examined Population and Human Health Interactions of the Foregoing Principal Mitigation and Monitoring Measures Cumulative Aspects Non-Technical Summary
Bryan Deegan MCIEEM is the Managing Director of Altamar Ltd. and holds a M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology and a National Diploma in Applied Aquatic Science. He has over 28 years' experience as an environmental consultant. Frank Spellman, holds a MSc in Zoology, (Trinity College Dublin) and a BSc Zoology (University College Dublin.)	Biodiversity

Jack Doyle (MSc Sustainable Environments). Joseph Adamson (MCIEEM) is a senior ecologist	
Luke Maguire Environmental Consultant and Geoscientist (BSc) at AWN Consulting. Teri Hayes (BSc MSc PGeol EurGeol) Senior Hydrogeologist and director at AWN Consulting	Land and Soils/ Population and Human Health
Luke Maguire Environmental Consultant and Geoscientist (BSc) at AWN Consulting. Teri Hayes (BSc MSc PGeol EurGeol) Senior Hydrogeologist and director at AWN Consulting	Water and Hydrogeology
Eoin Munn, Transport Insights. BSc Transport Operations, Technological University Dublin (2003-2007) MSc Business Analytics, University College Dublin (2007-2008) Member, Transport Planning Society (MTPS) Jurek Gozdek BScEng (Transport Engineering), Warsaw University of Technology (2017) MSc (Geographic Information Science), Technological University Dublin (2021) Narendra Jillelamudi. B.Tech in Civil Engineering, Acharya Nagarjuna University (2012-2016) M.Tech in Traffic and Transportation Planning, NIT Calicut (2017-2019)	Material Assets-Traffic
Chonaiil Bradley (Bsc ENV, PG Dip Circ Econ, AssocCIWM) of AWN Consulting	Material Assets (Waste Management)
Paul McGrail, Managing Director of Paul McGrail Consulting Engineers, graduated from Bolton Street DIT in 1999. Chartered Engineer with Engineers Ireland.	Material Assets (Utilities)
Aisling Cashell, an Environmental Consultant. BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. Dr. Jovanna Arndt, a Senior Environmental Consultant	Air Quality (Population and Human Health)
Aisling Cashell, an Environmental Consultant. BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. Dr. Jovanna Arndt, a Senior Environmental Consultant	Climate (Population and Human Health)
Alistair Maclaurin. Alistair holds a BSc, Diploma in Acoustics and Noise Control. Member of the Institute of Acoustics (MIOA).	Noise and Vibration (Population and Human Health)
Andrew Bunbury who is a fully qualified Landscape Architect and Chartered Member of the Landscape Institute (CMLI) UK with over 25 years' consultancy experience in the landscape profession across the UK and Ireland.	Landscape and Visual Impacts
IAC, Faith Bailey MA, BA (Hons), MCIfA Associate Director	Archaeology, Architectural and Cultural Heritage
Eamonn Doran DCA MRAI	Risk Management

1.10 NON-TECHNICAL SUMMARY

One of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications of any decisions. Article 5(1)(e) requires the developer to include a non-technical summary in the EIAR.

The EPA guidelines 2022 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 the Competent Authority.

The 2018 EIA Guidelines (paragraph 4.6) prepared by the DHPLG state that the Non-Technical Summary “should be concise and comprehensive and should be written in language easily understood by a lay member of the public not having a background in environmental matters or an in-depth knowledge of the proposed project.”

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 in Volume I.

1.11 DESCRIPTION OF THE OPERATION STAGE OF THE PROJECT

Pursuant to the EIA Directive an EIAR document is required to set out a description of the project processes, activities, materials, and natural resources utilised; and the activities, materials and natural resources and the effects, residues and emissions anticipated by the operation of the project.

The proposed development is a residential development including associated roads and services infrastructural works, areas of open space. The primary direct significant environmental effects will arise during the construction stage. As a result, post-construction, the operation of the proposed development is therefore relatively benign and not likely to give rise to any significant additional impacts in terms of activities, materials or natural resources used or effects, residues or emissions which are likely to have a significant impact on population and human health, biodiversity, soils, water, air, climate, or landscape.

The primary likely and significant environmental impacts of the operation of the proposed development are fully addressed in the EIAR document; and relate to Population and Human Health, Landscape and Visual Impact and Noise and Air impacts associated with the traffic generated.

The proposed development also has the potential for cumulative, secondary, and indirect impacts particularly with respect to such topics as traffic – which in many instances – are often difficult to quantify due to complex inter-relationships. However, all cumulative secondary and indirect impacts are unlikely to be significant; and where appropriate, have been addressed in the content of this EIAR document.

1.11.1 DESCRIPTION OF CHANGES TO THE PROJECT

The Guidelines on the information to be contained in environmental impact assessment reports were published by the EPA in May 2022.

The EPA EIAR Guidelines 2022 state in relation to change:

“Very few projects remain unaltered throughout their existence. Success may bring growth; technology or market forces may cause processes or activities to alter. All projects change and – like living entities – will someday cease to function. The life cycles of some types of projects, such as quarries, are finite and predictable. Such projects often consider their closure and decommissioning in detail from the outset, while for most projects a general indication of the nature of possible future changes may suffice. While the examination of the potential consequences of change (such as extension) does not imply permission for such extension, its identification and consideration can be an important factor in the determination of the application. Descriptions of likely changes may cover:

- *Extension;*
- *Decommissioning;*
- *Other Changes.”*

As per the EPA guidelines and in the interests of proper planning and sustainable development it is important to consider the potential future growth and longer-term expansion of a proposed development in order to ensure that the geographical area in the vicinity of the proposed development has the assimilative carrying capacity to accommodate future development.

Given the proposed site layout extent and the limitations of physical boundaries, adjoining land uses and land ownership the potential for growth of the proposed development is considered limited and confined primarily to potential minor domestic extensions which will have a negligible impact.

The parameters for the future development of the area in the vicinity of the subject site are governed by the Fingal County Development Plan 2023-2029. Any adjacent undeveloped lands will be the subject of separate planning applications in the future, where they are identified as being suitable for development, and where the provision of the requisite physical and other infrastructure is available.

1.11.2 DESCRIPTION OF SECONDARY AND OFF-SITE DEVELOPMENTS

No significant secondary enabling development is deemed necessary to facilitate the proposed development. The planning application includes details of the necessary road works, which are required to facilitate this development. These works are assessed within this Environmental Impact Assessment Report.

1.11.3 RISKS OF MAJOR ACCIDENTS AND/OR DISASTERS

The surrounding context consists of a mix of residential, agricultural, employment, educational and open space public amenity lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

Article 3 of the Environmental Impact Assessment (EIA) Directive 2014/52/EU requires the assessment of expected effects of major accidents and/or disasters within an EIA. Article 3(2) of the Directive states that:

“The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned”.

Chapter 15 of the EiAR provides further detail.

1.11.4 CONSTRUCTION PHASE MITIGATION

With reference to the construction phase of the proposed development, the objective of the *Resource & Waste Management Plan*, included with the application, is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 (as amended) are complied with.

During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant or adverse effects to the existing public road network. The vast majority of the works (save for the upgrade works to the junction) are away from the public road in a controlled environment.

There will be some short-term impacts during the construction phase as the pipes are laid, particularly in respect of traffic management with regards to sensitive receptors. This may cause local short-term inconvenience and disturbance to residents and business in the vicinity of the works. However, the works would normally be undertaken in sections on a phased/rolling programme so that the number of persons experiencing local inconveniences at any one time is kept to a minimum.

Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used.

With reference to the operational phase of the development the design of the scheme has had regard to DMURS during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

With reference to natural disasters (e.g. flooding), the proposed development has undergone a Site-Specific Flood Risk Assessment, prepared by Paul McGrail Consulting Engineers. The main area of the site where development is proposed is not at risk of fluvial, pluvial or groundwater flooding.

1.12 RELATED DEVELOPMENT AND CUMULATIVE IMPACTS

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic which in many instances are often difficult to quantify due to complex inter-relationships. All cumulative, secondary and indirect impacts are unlikely to be significant and, where appropriate, have been addressed in the content of this EIAR document. Further detail is provided in chapter 17.

1.13 DIRECT AND INDIRECT EFFECTS RESULTING FROM USE OF NATURAL RESOURCES

Details of significant direct and indirect effects arising from the proposed development are outlined in Chapters 3-16 which deal with '*Aspects of the Environment Considered*'. No significant adverse impact is predicted to arise from the use of natural resources.

1.14 DIRECT AND INDIRECT EFFECTS RESULTING FROM EMISSION OF POLLUTANTS, CREATION OF NUISANCES AND ELIMINATION OF WASTE

Details of emissions arising from the development together with any direct and indirect effects resulting from same have been comprehensively assessed and are outlined in the relevant in Chapters 3-16 which deal with '*Aspects of the Environment Considered*'. There will be no significant direct or indirect effects arising from these sources.

1.15 FORECASTING METHODS USED FOR ENVIRONMENTAL EFFECTS

The methods employed to forecast, and the evidence used to identify the significant effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines. The general format followed was to identify the receiving environment, to add to that a projection of the "*loading*" placed on the various aspects of the environment by the development, to put forward amelioration measures, to lessen or remove an impact and thereby arrive at net predicted impact.

Where specific methodologies are employed for various sections of the EIAR they are referred to in the Receiving Environment (Baseline Scenario) sections in the EIAR. Some of the more detailed/specialised information sources and methodologies for several the environmental assessments are outlined hereunder.

1.16 TRANSBOUNDARY IMPACTS

Large-scale transboundary projects⁵ are defined as projects which are implemented in at least two Member States or having at least two Parties of Origin, and which are likely to cause significant effects on the environment or significant adverse transboundary impact.

Having regard to the nature and extent of the proposed development, which comprises a residential development, located in development boundary of Balbriggan, within the administrative area of Fingal County Council, transboundary impacts on the environment are not considered relevant, in this regard.

1.17 LINKS BETWEEN EIA AND APPROPRIATE ASSESSMENT/NIS

Article 6(3) of the Habitats Directive (92/43/EEC) provides that any project not directly connected with or necessary to the management of a Natura 2000 site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to an Appropriate Assessment of its implications for the site in view of the site's conservation objectives.

In January 2010 the DoEHLG issued a guidance document entitled '*Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*'. This guidance document enshrines the '*Source-Pathway-Receptor*' into the assessment of plans and projects which may have an impact on Natura 2000 sites.

An Appropriate Assessment screening and NIS was carried out by Altamar in accordance with 'Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance on the Provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC' - Brussels, 28.9.2021 C(2021) 6913 final. The AA Screening and NIS is included with the LRD application.

In accordance with these Guidelines, the Appropriate Assessment/NIS may be a separate document or form part of the EIAR. In the case of the proposed development a separate Appropriate Assessment Screening Report is submitted with this application as a standalone report and referenced in the Biodiversity Chapter, prepared by Altamar.

Article 5(1) of the Directive also states that the EIAR shall include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment. The developer shall, with a view to avoiding duplication of assessments, take into account the available results of other relevant assessments under Union or national legislation, in preparing the environmental impact assessment report.

In this regard a brief account of how the results of other relevant assessments considered in the preparation of this EIAR is included as Appendix A2 Volume III of the EIAR.

1.18 AVAILABILITY OF EIAR DOC

A copy of this EIAR document and Non-Technical Summary of the EIAR document is available for purchase at the offices of Fingal County Council (Planning Authority) at a fee not exceeding the reasonable cost of reproducing the document. It can also be viewed on the LRD website: www.FlemingtonsouthLRD.ie set up by the applicant.

1.19 IMPARTIALITY

This EIAR document has been prepared with reference to a standardised methodology which is universally accepted and acknowledged. Recognised and experienced environmental specialists have been used throughout the EIA process to ensure the EIAR document produced is robust, impartial and objective.

⁵ The definition is based on Articles 2(1) and 4 of the EIA Directive and Article 2(3) and (5) of the Espoo Convention, respectively. <http://ec.europa.eu/environment/eia/pdf/Transboundary%20EIA%20Guide.pdf>

1.20 STATEMENT OF DIFFICULTIES ENCOUNTERED

No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this statement, such that the prediction of impacts has not been possible. Where any specific difficulties were encountered these are outlined in the relevant chapter of the EIAR.

1.21 EIA QUALITY CONTROL AND REVIEW

John Spain Associates is committed to consistently monitoring the quality of EIAR documents prepared both in draft form and before they are finalised, published and submitted to the appropriate competent authority taking into account latest best-practice procedure, legislation and policy. The EPA published draft guidelines on information to be contained in Environmental Impact Assessment Report⁶ and the Department of Housing, Planning, Community and Local Government have published a consultation paper⁷, which have been consulted in the preparation of this EIAR. This document includes a detailed EIAR Review Checklist which has been used to undertake a review of this EIAR document.

1.22 ERRORS

While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

⁶ Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022

⁷ Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems - Key Issues Consultation Paper, Department of Environment, Community and Local Government, 2017.

2.0 DESCRIPTION OF THE PROJECT AND CONSIDERATION OF ALTERNATIVES

2.1 INTRODUCTION AND TERMS OF REFERENCE

This section of the EIAR has been prepared by John Spain Associates, Planning & Development Consultants, and provides a description of the proposed development and also explains the evolution of the scheme design through the reasonable alternatives examined. This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates.

Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 23 years of experience of Environmental Impact Assessment and urban development.

Rory has acted as lead planning consultant on a range of high-quality complex planning applications across the country over an extended period. Rory has wide-ranging experience in the management and review of Environmental Impact Assessment Reports (EIAR) for major infrastructure, residential and mixed-use development and redevelopment projects. Inputs to this chapter have also been provided by DCA, Paul McGrail Consulting Engineers and Parkhood Landscape Architects.

The description of the proposed development is one of the two foundations upon which an EIAR is based (the other being the description of the existing environment described in this chapter and by each of the specialist consultants in the subsequent chapters). It is also a requirement of the EIA Directive (as amended) to present *“a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.”*

2.2 DESCRIPTION OF THE LOCATION OF THE PROJECT

The subject lands comprise 2 no. parcels of land extending to an area of 24.91 hectares gross c. 17.30 ha (net). The main parcel consists of an irregular shaped site immediately west of an established housing area at Flemington Park in the north and Taylor's Hill to the south, within the townlands of Flemington and Clonard or Folkstown Great. The site is generally greenfield site comprising all or part of several fields. The western section of the site fronts Clonard Road and is adjacent to an existing playing field.

Figure 2.1: Site Location with approximate extent of site outlined in red

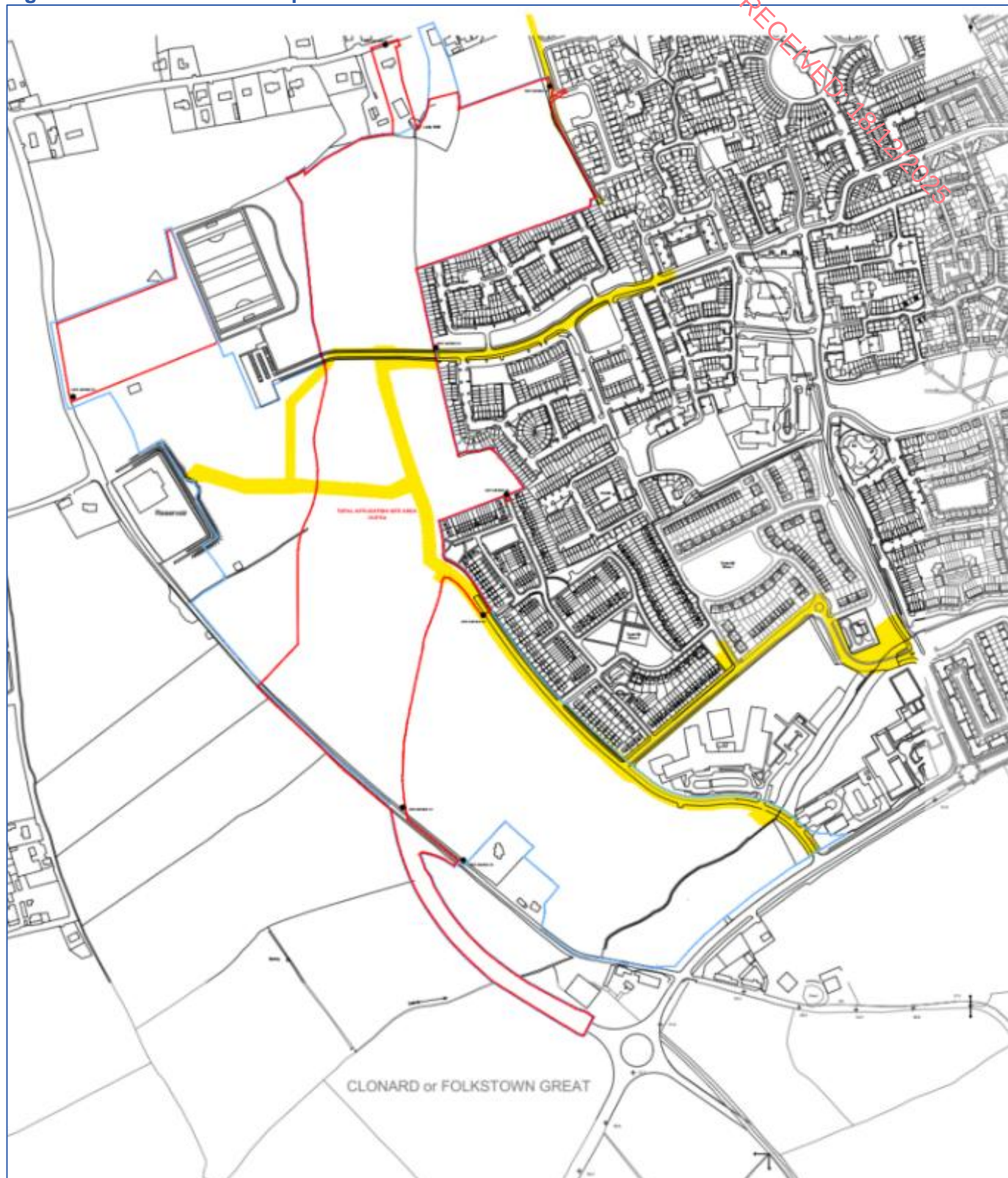
Source: Altamar

There is existing housing all along the eastern boundary and a residential development (Folkstown Park) is under construction adjacent to the southeast. There is generally agricultural land to the north and south/southwest of this parcel. The parcel is divided by a road across the site which connects Hamlet Lane to the east to a newly developed car park/sports field/park adjacent to the west.

The second parcel of land is located c. 70m to the west of the main parcel of land fronting onto the Clonard Road (L1130 Local Road) with agricultural land to the north and south.

The site is located c. 600 metres from Castle Mill Shopping Centre and c. 1.5 km from Millfield Shopping Centre both of which provide a range of services and include a supermarket. The site is also c. 2.4 km from Balbriggan town centre. With respect to public transport, the subject site is located 2.5 km from Balbriggan Train Station which provides frequent services into Dublin City as well as intercity services along the east coast. Balbriggan is also well connected to Dublin by bus services operated by Bus Eireann and Dublin Bus.

Figure 2.2: Site Location Map



Source: DCA Architects

2.2.1 TOPOGRAPHY

The topography is relatively consistent with the site generally falling in elevation from northeast to southwest and characterized by minor localized undulations. The elevation falls from approximately 47m AOD (Above Ordnance Datum) to approximately 42m AOD from northeast to southwest. A portion of the central western section of the site located adjacent to the Clonard Road lies on elevated land at approximately 66m AOD.

2.2.2 ADJOINING/EXISTING LAND USES

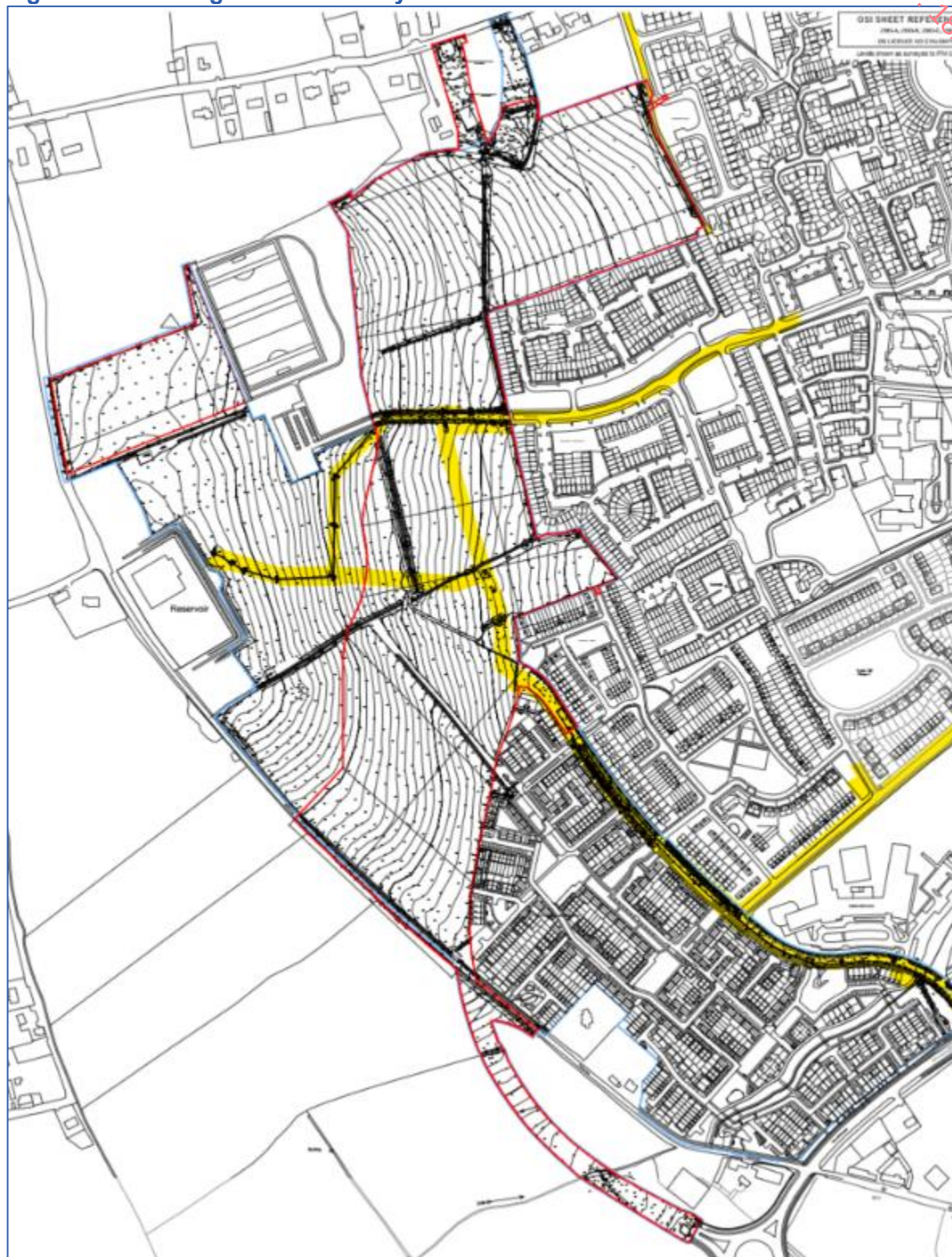
The site is currently a greenfield site characterised with an agricultural function, with existing residential to the east and newly under-construction residential development to the south. To the east is agricultural lands, while to the north are residential dwellings along Flemington Lane. The existing land use is a mixture of agricultural and formerly agricultural.

2.2.3 EXISTING VEGETATION

The overall site contains a number of existing vegetation types as set out in Chapter 4 (Biodiversity chapter) of the EIAR. A number of arable crop fields are located throughout the site. Opportunistic flora species were present. Species noted included creeping buttercup, rampion fumitory, corn marigold, thistles, dandelion, docks, and common vetch. No species of conservation importance were noted. In addition, improved agricultural grassland was recorded. This habitat is located to the south of the subject site. This habitat comprises of species-poor grassland with a short sward resulting from grazing practices. A pocket of Recolonising Bare Ground has developed in the southeastern portion of the site in previously cleared ground. In this area, previously grown crops have not been replanted and therefore consists of an area of Recolonising Bare Ground. Throughout the centre and northern portions of the site, Dry meadows and grassy verges habitats have developed from land previously utilised for arable crops.

2.3 DESCRIPTION OF THE PHYSICAL CHARACTERISTICS OF THE WHOLE PROPOSED DEVELOPMENT

Figure 2.3: Existing Overall Site Layout



A507-DCA-XX-XX-DR-A-002 - Existing Site Layout

2.4 MAIN CHARACTERISTICS OF THE OPERATIONAL PHASE OF THE PROJECT

2.4.1 DEVELOPMENT PROPOSALS SUMMARY

The development will consist of the construction of 815 no. dwellings (610 no. houses, 194 apartments & 11 no. later living dwellings), a portion of the C-Ring Road, open space, community building/retail floorspace and 2 no. creches as follows:

- A) Demolition of existing single storey dwelling (c. 154 sq. m) and agricultural outbuilding (c. 366 sq. m) located to the south of Flemington Lane;
- B) Provision of portion of 'C-Ring Road' from Flemington Lane [to include junctions and ancillary footpaths, cycle paths, lighting, bus stops, boundary wall to adjoining owner, and tie in to existing roads/agricultural access points] to link into the existing R122 roundabout with vehicular access also from the Boulevard Road, Hamlet Lane, & Flemington Lane along with associated amendments to the layout of the Local Road L1130 (also known as the Clonard Road including the creation of a cul de sac arrangement to the south of the C-Ring Road); the provision of car parking spaces (1,037 no.), bicycle parking spaces (1,144 no.) and all internal roads and footpaths and bicycle and bin stores, & substations;
- C) Provision of a community pavilion (2 storeys) comprising community floorspace of c. 730 sq. m (with flexible internal spaces) along with a retail unit (c. 419 sq. m) at ground floor of apartment Block F as well as 2 no. 2 storey creches c. 530 sq. m each with ancillary parking and open space areas;
- D) 610 no. terraced, semi-detached & detached houses comprising 318 no. 2-bedroom houses (2 storey), 254 no. 3-bedroom houses (2 storey) and 38 no. 4-bedroom houses [house types B1/F4/F5 with variants] 3 storeys;
- E) 194 no. apartments in 5 no. apartment buildings (52 no. studio apartments, 87 no. 1 bedroom apartments, 51 no. 2 bedroom apartments and 4 no. 3 bedroom apartments - all apartments with terrace or balcony on elevations) as follows: Block A [4 storeys & 64 no. apartments] comprising 47 no. 1 bedroom apartments and 17 no. 2 bedroom apartments; Block C, [Part 3-4 storeys & 18 no. apartments] comprising 10 no. 1 bedroom apartments, 6 no. 2 bedroom apartments & 2 no. 3 bedroom apartments; Block F [Part 4-5 storeys & 48 no. apartments] comprising 36 no. 1 bedroom apartments and 12 no. 2 bedroom apartments; Block G [Part 3-4 storeys & 40 no. apartments]; comprising 30 no. 1 bedroom apartments and 10 no. 2 bedroom apartments; Block H [part 3-4 storeys & 24 no. apartments] comprising 16 no. 1 bedroom apartments, 6 no. 2 bedroom apartments & 2 no. 3 bedroom apartments;
- F) 11 no. single storey 2 bedroom later living houses with associated communal open space;
- G) 5.26 hectares of open space comprising Class 1 Open Space (c. 2.39 hectares in the western separate parcel of land), Public open space c.2.87 hectares, hard and soft landscaping (including public lighting & boundary treatment, ESB substations, bicycle and bin stores) and communal/semi-private open space for the proposed apartment units;
- H) Provision of surface water attenuation measures, connection to water supply, provision of foul drainage infrastructure (and Uisce Eireann diversion) to Uisce Eireann specifications and all ancillary site development, construction, and landscaping works including reprofiling of the site where required;
- I) The proposals will replace the previously permitted LRD under planning reg. ref. LRD0006/S3 & ACP Ref: 319343-24.

The total gross site area extends to 24.91 ha, and the net site area extends to 17.3 hectares (net).

The figure below illustrates the site layout plan for the subject lands:

Figure 2.4: Proposed Site Layout

Source: Doran Cray Architects A507-DCA-XX-XX-DR-A-014 - Proposed Site Layout

Table 2.1: Summary of Key Site Statistics

Statistic	Detail
Site Area (overall)	24.91 hectares (gross) 17.30 Net
Land Use Zonings	RA – Residential Area” Objective: Provide for new residential communities subject to the provision of the necessary social and physical infrastructure. OS - Open Space’ Objective: ‘Preserve and provide for open space and recreational amenities’. RU – Rural ‘ Objective: Protect and promote in a balanced way, the development of agriculture and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage.’
No. of Dwellings	815 (610 houses, 194 apartments & 11 no. later living dwellings)
Overall Mix	1-bed 139 (17%) 2 bed 380 (46%) 3 bed 258 (32%) 4 bed 38 (5%)
Universally Accessible Units	243 no. (30%) Apartments and Houses. 11% of the 621 no. houses proposed (including 11 no. later living units)
Density	47.1 dph (net)
Open Space	2.87 hectares (16.58% of site area) on RA zoned lands 2.39 hectares of Class 1 Open Space on OS zoned lands
Communal Open Space	2,383 sq. m provided (1,036 sq. m required)
Play equipment areas	3,260 sq. m of play equipment areas
Building Heights	2 & 3 storey houses, 4/5 storeys apartment buildings
Creches	2 no. standalone 2 storey creches (c. 530 sq. m)
Commercial/Retail Unit	419 sq. m (at ground floor of Community mixed use building)
Community Facilities	1 no. 2 storey community pavilion (730 sq. m)
Car Parking	1,037 no. spaces
Cycle Parking	1,144 no.
Site Coverage (Gross)	12.5%
Site Coverage (Net)	18.0%
Plot Ratio (Gross)	0.27
Plot Ratio (Net)	0.39
Total Floor Area	66,784 sq. m

The proposed residential residential breakdown of the 815 no. units is shown in the below table. The proposal provides for a mix of semi-detached, detached, terrace and end of terrace houses, with apartments. The units range in size and include apartments and 2, 3 and 4-bedroom houses. The unit mix consists of 604 houses, 204 apartments & 11 no. later living dwellings.

Table 2.2: Mix of Dwellings at Flemington South LRD

Typology	Studio	1-beds	2-beds	3-beds	4-beds	Total	Total (%)
Houses			318	254	38	610	74.8%
Apartments	52	87	51	4		194	23.8%
Later Living Units			11			11	1.3%
Total	52	87	380	258	38	815	
Total (%)	6.4%	10.7%	46.6%	31.7%	4.7%		

Source: Doran Cray Architects

2.4.2 HOUSES

It is proposed to provide 610 no. terraced and semi-detached houses comprising 318 no. 2-bedroom houses (2 storey), 254 no. 3-bedroom houses (2 storey) and 38 no. 4-bedroom houses [house types with variants] 3 storeys, all located within different character areas.

There are 9 no. house types as follows:

House Type B1 (4-Bed) End of Terrace	9	152	1,368
House Type D1 (3-Bed) Semi-D/ End of Terrace	126	92	11,592
House Type E1 (2-Bed) Terraced	318	73	23,214
House Type F1 (3-Bed) Semi-D/ End of Terrace	59	103	6,077
House Type F2 (3-Bed) Semi-D/ End of Terrace	3	104	312
House Type F3 (3-Bed) Semi-D / End of T / Terraced	59	104	6,136
House Type F4 (4-Bed) End of Terrace	6	154	924
House Type F5 (4-Bed) Detached / Semi-D	23	156	3,588
House Type G (3-Bed) Detached	7	92	644

Figure 2.5: CGI Houses Character Area 1



Source: 3D Design Bureau

2.4.3 APARTMENT BUILDINGS

It is proposed to provide 194 no. apartments (52 no. studio apartments, 87 no. 1 bedroom apartments, 51 no. 2 bedroom apartments and 4 no. 3 bedroom apartments - all apartments with terrace or balcony on elevations) in 5 no. apartment buildings located at strategic nodes along the proposed C-Ring Road between Flemington Lane and the Boulevard Road.

Of the 152 apartments, 22 are dual aspect across blocks A, F & G. All walk-ups/own door units are dual aspect (42). Therefore 64 of 194 are dual aspect - 33%.

2.4.3.1 Apartment Block A

Apartment Block A is located at a prominent location adjacent to the largest area of Open Space within the development and together act as a gateway into the development on approach along the proposed C-Ring from the north.

Block A [4 storeys & 64 no. apartments] will consist of 47 no. 1 bedroom apartments and 17 no. 2 bedroom apartments.

Figure 2.6: Apartment Building A



Source: DCA

Figure 2.7: Block A & Community Building Elevation (CGI)

Source: 3D Design Bureau

It is noted that a bike store and bin stores are provided enclosed within the footprint of the building at ground floor level, providing a high-quality storage solution for future residents.

Figure 2.8: Block A Ground Floor

Source: DCA

2.4.3.2 Apartment Blocks F and G

Two 3-4 storey apartment blocks (F&G) are proposed on the western edge of the junction between the proposed C-Ring Road and the existing Boulevard create a focal point at the centre of the development with the permitted mixed-use building to the east.

Figure 2.9: Apartment Buildings F and G



Source: Parkhood

Block F is Part 4-5 storeys & 48 no. apartments comprising 36 no. 1 bedroom apartments and 12 no. 2 bedroom apartments. At lower ground floor level, it is proposed to provide a retail unit of c. 419 sq. m.

Block G [Part 3-4 storeys & 40 no. apartments]; comprising 30 no. 1 bedroom apartments and 10 no. 2 bedroom apartments.

2.4.3.3 Apartment Buildings C & H 'Walk up/Own Door'

Apartment building C is 3 storeys and is located to the south of the internal road between Hamlet Lane and the Class 1 open space to the west and comprises 18 no. apartments consisting of 10 no. 1 bedroom apartments, 6 no. 2 bedroom apartments and 2 no. 3 bedroom apartments which will all have own door access. Communal open space is provided to the rear, providing a marker/node within the scheme at the intersection of the C-Ring Road and the east west road.

For example, Blocks B and C, front onto the extension to Hamlet Lane, providing a strong frontage along this key route between the existing development to the east and the Class 1 open space to the west.

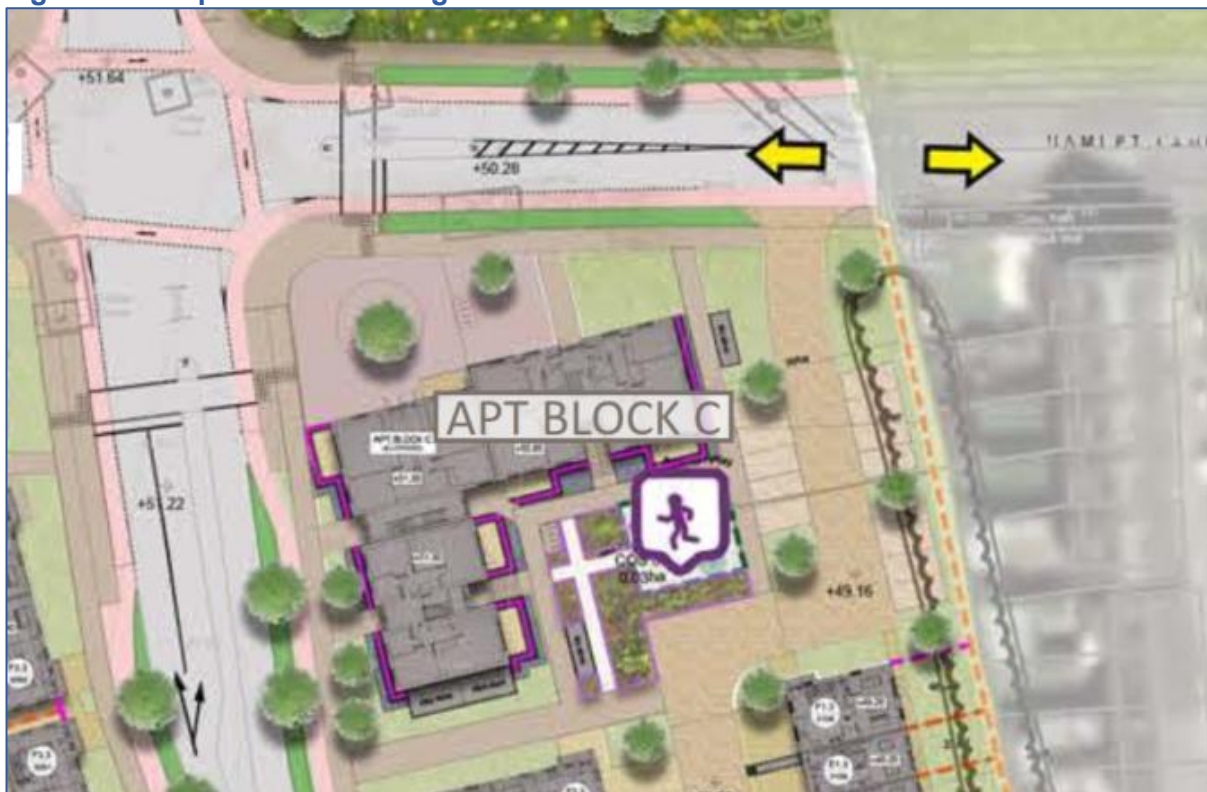
Universal access

The proposed walk-up units provide an accessible 2-bed apartment which is accessed at grade on the ground floor. The 2-bed apartment has been designed to meet the needs of the occupants regardless of their age, size, ability or disability.

Wide corridors and doors facilitate comfortable and unimpeded movement between spaces. The open plan living area allows ease of movement for everyone, whether they are sitting down, accessing shelves, switching on the TV, or opening windows and doors.

The units are provided with an intercom with video link which allows residents to identify callers before they let them into the building.

Figure 2.10: Apartment Building C



Source: Parkhoo

Apartment Building H is 3 no. storeys and comprises 24 own door/walk up apartments, consisting of 16 no. 1 bedroom apartments, 6 no. 2 bedroom apartments and 2 no. 3 bedroom apartments, located

strategically at the junction of the C-Ring road and local road, providing an important marker for the scheme. The

Figure 2.11: Apartment Building H



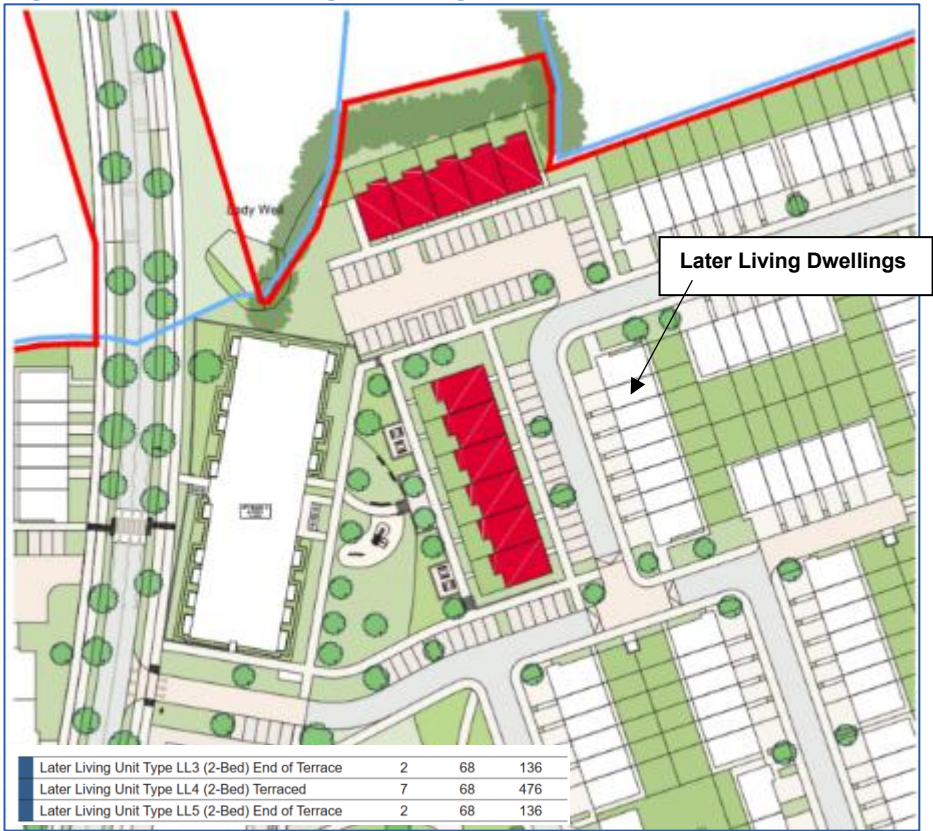
Source: Parkhood

2.4.4 LATER LIVING DWELLINGS

In the northern part of the site, it is proposed to provide 11 no. 2 bedroom later living units with associated communal open space adjacent. The units front onto a large area of Communal Open Space which is shared with Apartment Block A to the west. Benches are positioned around the Communal Open Space for interaction.

All of single-storey later living units are dual fronted with the exception of end-of-terrace units which have a triple aspect. This ensures that streets, areas of open space and parking courtyards are well overlooked which promotes a feeling of safety through passive surveillance and a sense of community within the overall development.

Figure 2.12: Later Living Dwellings



Source: DCA

2.5 CRECHE PROVISION

It is proposed to provide 2 no. 2 storey creches both of which will be c. 530 sq. m. in size, which will complement the adjoining permitted creche (c. 1,025 sqm) under phase 2D, which is located immediately to the east of the subject site in Taylor Hill which can also cater for residents located in the southern part of this LRD as there is spare capacity available for this creche even taking into account the previous phases in Taylors Hill.

Figure 2.13: Proposed Creche Design



Source: DCA

Figure 2.14: Northern Creche Location



Source: Parkhood

The location of the creches is such that they will provide easy access not only within the scheme but also due to their location easy access to the adjoining areas to the east by virtue of the high degree of permeability in this western area of Balbriggan. From the Social Infrastructure Assessment (prepared by JSA), it is apparent that the majority of the creches in the western area are located further to the east adjacent to the town centre area. It is considered that the location of the proposed creches will complement the location of Phase 2D creche providing an excellent distribution of creche provision in the western area of Balbriggan, within an easy walking distance to existing and the new residential communities.

Figure 2.15: Central Creche Location



Source: Parkhood

Excluding the 1 bed units and later living units within the scheme, the overall development has the potential to require some 178 spaces using the relatively conservative 2001 Childcare Guidelines. The actual demand may be substantially less as set out in the JSA Social Infrastructure Assessment.

Together, both creches provide 212 childcare spaces at the following split which is based on Schedule of the 'Child Care Act 1991 (Early Years Services) Regulations' (2016):

0-1 Year	32 spaces
1-2 Year	60 spaces
2-3 Year	72 spaces
3-6 Year	48 spaces
Total	212 spaces

It should be noted that the split above is indicative and subject to the final operator requirements.

2.6 COMMUNITY FLOORSPACE

This application proposes some 2,209 sq. m of community and retail floorspace comprising 2 no. creches (1,060 sq. m combined) along with a standalone community building of 730 sq. m and a ground floor retail unit contained in Apartment Block F. This compares to 1,560 sq. m of community/retail floorspace proposed at the S32B meeting, representing a significant increase of some 41.6%.

Figure 2.16: CGI Community Building (LHS)



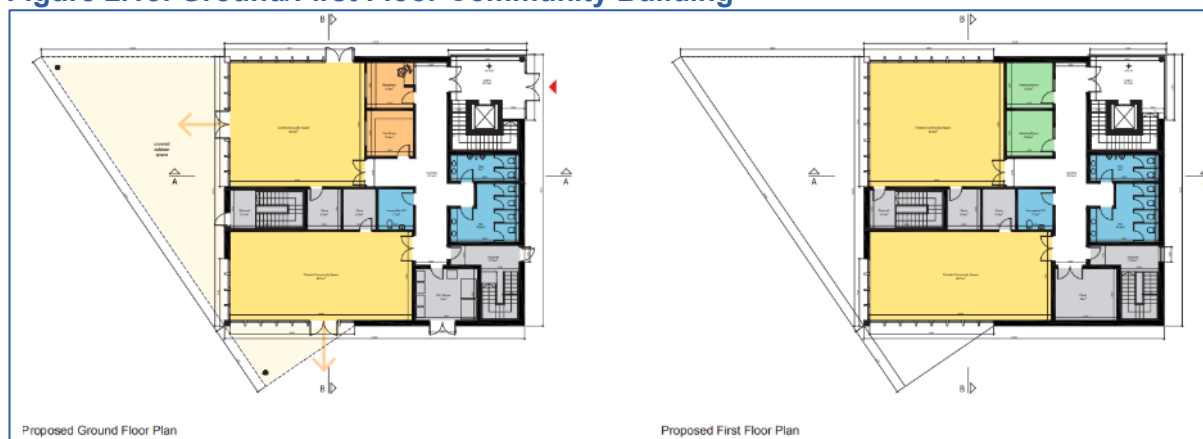
Source: 3DDB

It is proposed to provide a 2-storey community pavilion located in the northern part of the subject site which will anchor the northern open space as well as being close to the later living dwellings/apartment building in that part of the site. It will comprise c. 730 sq. m. with a series of flexible meeting rooms and spaces.

The building will include a café area, meeting rooms and a hall space along with WC facilities. The building is well located adjacent to the open space and also the later living units providing a 'park hub' of activity and interaction.

Figure 2.17: Community Building

Source: DCA

Figure 2.18: Ground/First Floor Community Building

Source: DCA

2.7 RETAIL FLOORSPACE

It is proposed to provide retail floorspace of some 419 sq. m at Lower Ground Floor Level of Block F which will provide some top-up day to day convenience shopping and or a small-scale retail services function, which is very much sub-servient to the (level 3) Major Town Centre of Balbriggan.

It is noted that 350 sqm of commercial floorspace is already granted under FCC Reg. Ref.: LRD0048/S3E immediately adjoining the site to the south, consolidating existing local commercial / retail provision, in a conveniently sited location in the heart of the development at the junction of Boulevard Road and the C-Ring Road.

Figure 2.19: Retail Hub



The proposed retail unit located on the lower-ground floor of Block F, will provide activity on the plaza which incorporates a tiered landscaping design with integrated seating as a place for people to meet.

The proposed apartment blocks have been arranged to provide views into the development via a public space/plaza located between the two blocks.

Figure 2.20: Block F and G with Retail at Lower Ground Floor Level

Source: 3DDB

Figure 2.21: Retail Floorspace

2.8 ROADS AND ACCESS

There are four main accesses to the development from the existing Boulevard Road, Proposed CRing Road, Existing Flemington Lane & Existing Hamlet Lane allowing for access for emergency vehicles in case of an accident at one entrance.

The proposed road layout is shown on drawings numbers 2024-122-050121, 2024-122-050122 & 2024-122-050123, and its road long sections on drawings numbers 2024-122-050151, 2024-122-050152 & 2024-122-050152.

2.8.1 DMURS

We refer the Planning Authority to the enclosed DMURS compliance document prepared by Paul McGrail CE which outlines that the design approach for the proposed residential development has been guided by the principles and best practice standards set out in the Design Manual for Urban Roads and Streets (DMURS). The layout prioritises pedestrian and cyclist safety, comfort, and convenience while supporting sustainable travel and creating an attractive urban environment stating:

“The proposed development fully complies with DMURS principles by prioritising active travel, permeability, safety, and placemaking. It delivers a balanced approach between vehicular movement and the creation of attractive, people-friendly streets, achieving a high-quality urban environment consistent with national guidance.”

2.8.2 CYCLE PARKING

The proposed cycle parking provision has been designed to encourage cycling as a key mode of transport to and from the proposed development and reduce the reliance of residents and visitors on private car use. The FCC Development Plan Standards and the Sustainable Residential Development and Compact Settlements Guidelines (January 2024) have been consulted in order to determine a suitable amount of cycle parking to be accommodated within the proposed development.

BICYCLE PARKING SUMMARY

	Secure Bicycle Parking	Visitor Bicycle Parking	Subtotal
Terraced Housing (no garden access)	644	-	644
Apartment Block A	76	24	100
Apartment Block F	76	16	92
Apartment Block G	76	16	92
Walk-Up Apartment Block C	44	16	60
Walk-Up Apartment Block H	22	16	38
Community Building	-	24	24
Commercial Space (Apartment Block G)	-	16	16
Creches	36	32	68
Class 1 Open Space	-	10	10
TOTAL	974	170	1,144

Overall, it is proposed to provide 1,144 cycle spaces. To meet the residents' cycle parking demand, 938 no. covered and secure (behind locked doors) spaces will be provided. 644 of these spaces will be for terraced housing with 294 no. cycle spaces to be provided for the apartment units at ground floor level. Cargo bike parking spaces are to be provided as part of the development proposal.

For the proposed creches, a total of 68 no. cycle parking spaces are proposed along with 24 no. spaces for the community building and 16 no. spaces for the commercial space. 170 no. visitor spaces will be provided across the site in the form of Sheffield stands. A total of 1,144 no. cycle spaces is to be provided throughout the development.

2.8.3 CAR PARKING

The proposed car parking provision has been designed to ensure balance between the residents' mobility needs with the focus on alternative modes of transport, while being cognisant of the site's locational and accessibility characteristics. The FCC Development Plan Standards and the Sustainable Residential

Development and Compact Settlements Guidelines (January 2024) have been consulted in order to determine a suitable amount of car parking.

Overall, 1,037 no. car parking spaces will be provided, comprising 704 no. in-curtilage, 148 on street, 29 no. visitor parking, 9 no. for the later living units, 115 no. apartment parking and 17 no. parking spaces for the creches along with 10 no. car sharing bays and 5 no. parking spaces for the retail unit.

A summary of the overall car parking numbers are set out below:

	In-Curtilage Residential Parking	704
	On-Street Residential Parking (Houses)	148
	Visitor Parking	29
	Later Living Parking	9
	Apartment Parking	115
	Car Sharing Bays	10
	Creche Parking	17
	Commercial Parking	5
TOTAL PARKING		1,037

DCA drawing no. A507-DCA-XX-XX-DR-A-038 provides a breakdown of parking within the individual 5 no. character areas.

As can be seen in the preceding table, 704 no. parking spaces shall be provided within curtilage of the house units, 148 no. on-street residential spaces, 9 no. spaces for later living units, 115 no. spaces provided for apartments. In addition, 17 no. car parking spaces are provided for the crèches and 5 no. parking spaces (includes accessible parking space provision) for the commercial unit.

Following on from feedback noted in the LRD Opinion Letter from FCC at the Section 32D stage, 10 no. car share parking spaces are proposed as part of the development. These spaces are located in Character Area 1 and Character Area 4. The car share spaces will provide future residents with an alternative to private car ownership and encourage sustainable mobility practices.

The total car parking provision includes 1,037 no. spaces, which translates into 1.22 no. spaces per unit.

All of the proposed parking bays will be in the form of external surface parking spaces. Resident parking spaces will be located either in the individual unit's curtilage or, where the same is not practical, in groups of on-street spaces in proximity of the relevant units. All resident parking spaces will be perpendicular. A plan of car parking facilities is included in the application package.

2.9 PROPOSED C RING ROAD

The proposals make provision for the delivery of a key section of the C-ring road to the Clonard Road at the southern end of the site and therefore the proposal is in compliance with the Fingal Development Plan Road Objective set out in the zoning map relevant to the site.

The proposals will entail the provision of portion of 'C-Ring Road' from Flemington Lane [to include junctions and ancillary footpaths, cycle paths, lighting, bus stops and tie in to existing roads] to link into the existing R122 roundabout with vehicular access also from the Boulevard Road, Hamlet Lane, & Flemington Lane along with associated amendments to the layout of the Local Road L1130 (also known as the Clonard Road including the creation of a cul de sac arrangement to the south of the C-Ring Road)

Figure 2.22: Southern Section of C-Ring Road

Source: PMcGrail CE

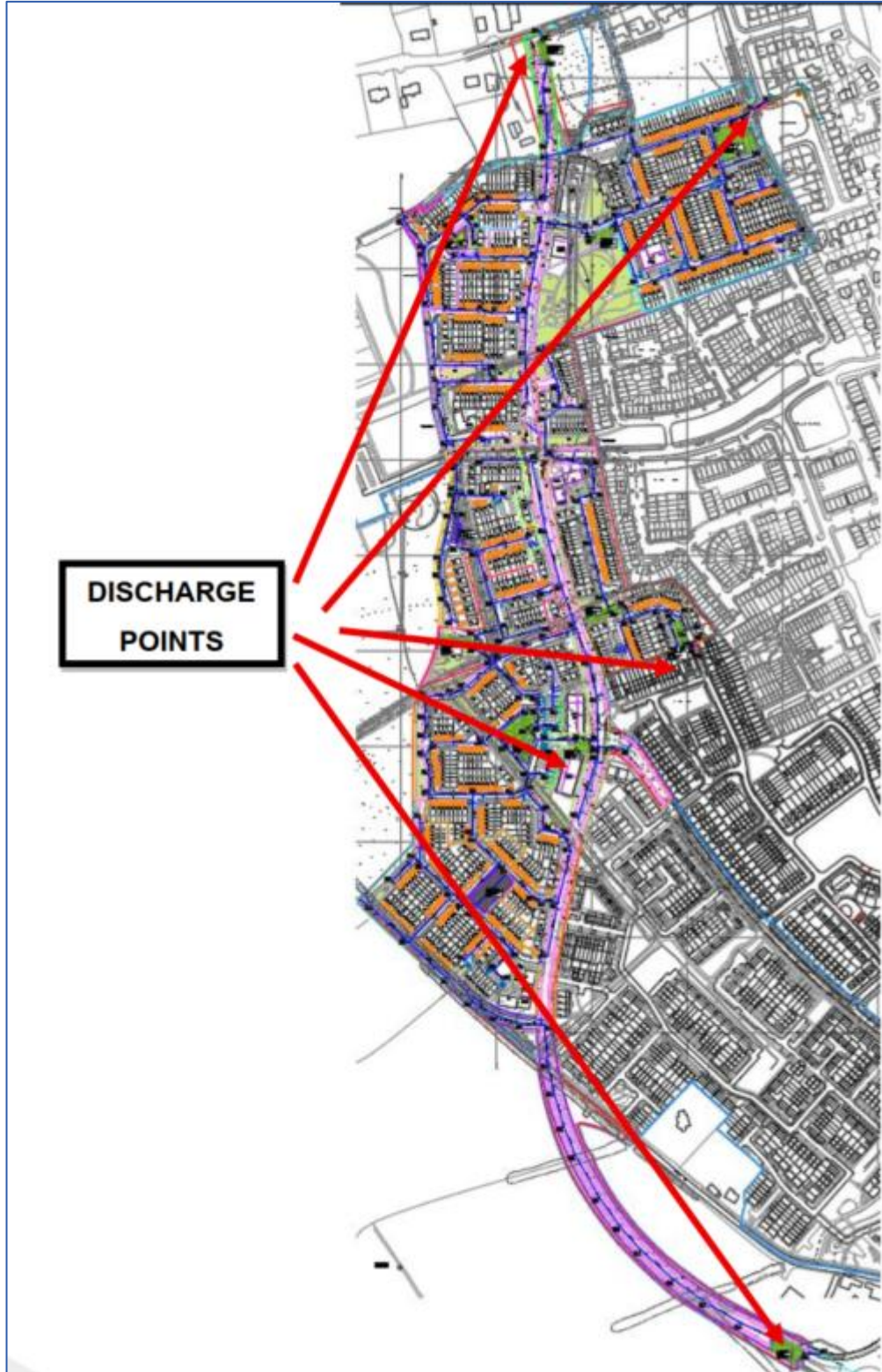
2.10 SERVICES STRATEGY

We refer the Planning Authority to the Paul McGrail Engineering Services Report included with the LRD application as well as the detail provided in chapter 13 of the EIAR (Volume II).

2.10.1 SURFACE WATER

There is no existing surface water drainage network serving the site. Rainwater currently drains by means of direct infiltration and percolation into the underlying agricultural ground.

It is proposed to discharge surface water from the site to five existing surface water pipes under the ownership of Fingal County Council, as illustrated.

Figure 2.23: Proposed Connection Points to Existing Storm Water Drainage

Source: PMcGrail CE

The overall development will be delivered in 3 phases as set out in Drawing no. A507-DCA-XX-XX-DR-A-041 - Proposed Site Layout – Phasing, prepared by DCA, included with the application. While the overall phasing relates to 3 no. phases, for surface water the site will be divided into five surface water catchments, each incorporating attenuation measures to ensure post-development runoff is restricted to the equivalent greenfield runoff rate.

There are 5 no. surface water connection points for this site which it will be into the Flemington Lane at the north boundary of the site, on the Flemington Park at northeast of the boundary, at existing Taylor Hill Terrace, at the north of the Boulevard Road with allowance of 50l/s as part of the granted permission from Taylor Hill Phase 3A, 3B & 3C and to the last connection to the existing Roundabout at R122.

2.10.1.1 Surface Water Network Design

The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers (GDSDS). Following consultation with Fingal County Council, there will be provided a detention basin to provide surface water storage volume. The allowable flow rate has been set at the greenfield run off rate. Surface water run-off from the surface water catchment will be attenuated using a Hydrobrake on the surface water outlet from the catchment area.

It is proposed to use a sustainable urban drainage system (SuDS) approach to stormwater management throughout the site. The overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater. The proposed SUDs that feature in the development are modular permeable paving, swales, bioretention, detention basins, and Hydrobrake flow control.

Surface water runoff from the development would be attenuated to greenfield runoff (Q_{bar}), in accordance with the recommendations of the GDSDS. Surface water run-off from each surface water catchment will be attenuated using a Hydrobrake on the surface water outlet from each catchment.

2.10.1.1.1 SUDS

It is proposed to use a sustainable urban drainage system (SuDS) approach to stormwater management throughout the site where possible. The overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater.

The SUDs features proposed in our development are as follows:

- Modular Permeable Paving
- Swales
- Bioretention Systems
- Detention Basins
- Petrol Interceptor
- Hydrobrake flow control

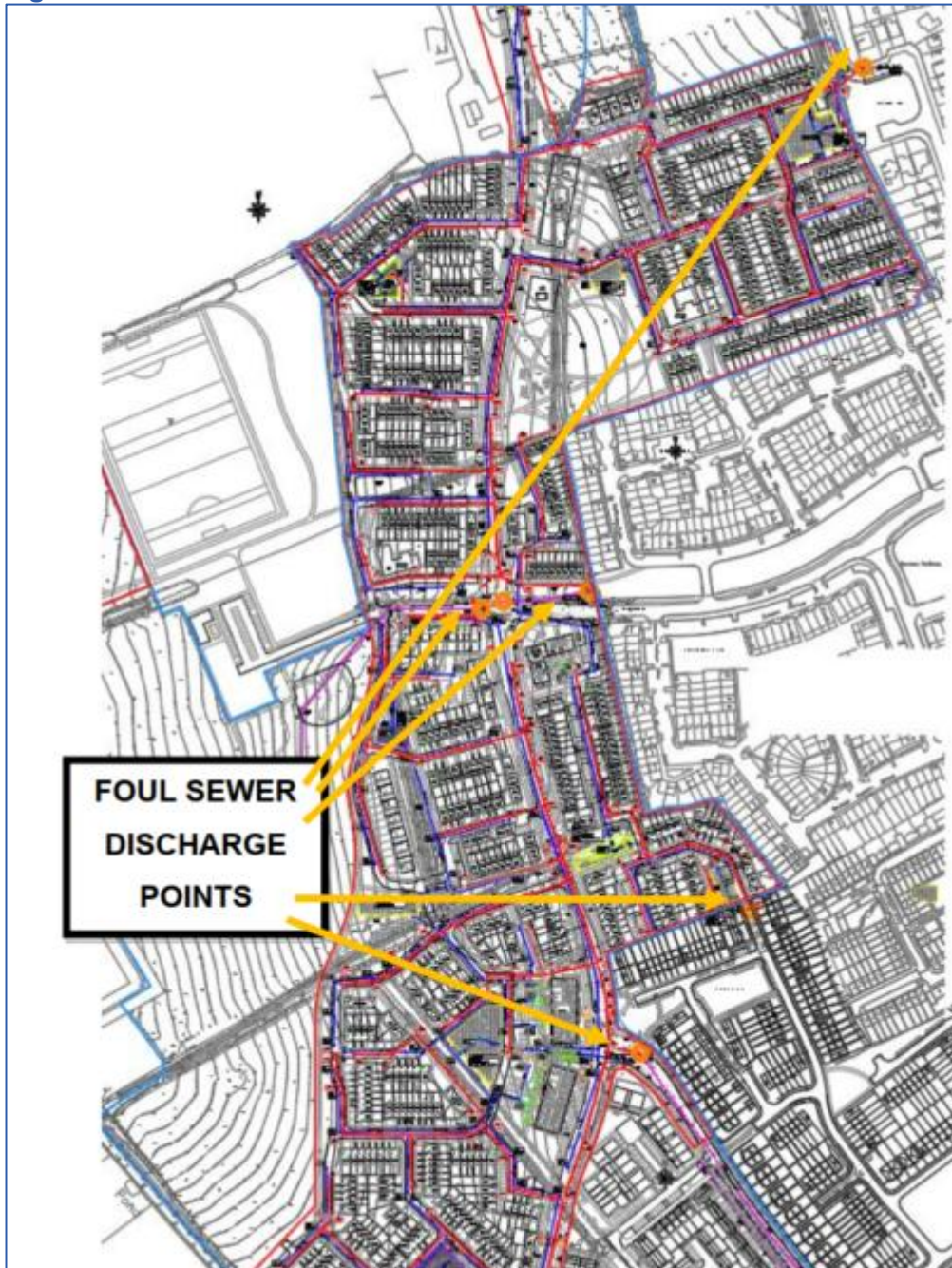
SuDS drainage designs collect and treat surface water runoff as close to source as possible. Surface water runoff is managed using a treatment train approach. This ensures that the quantity and quality of surface water runoff are addressed through the techniques of Pollution Prevention, Source Control, Site Control and Regional Control. The treatment train approach divides the drainage elements of the development into sub catchments with different drainage characteristics and land uses, such as a dwelling with modular permeable paving. Surface water runoff from the development would be attenuated to greenfield runoff (Q_{bar}), in accordance with the recommendations of the GDSDS. Surface water run-off from each surface water catchment will be attenuated using a Hydrobrake on the surface water outlet from each catchment.

To protect the ground water, the design has introduced a number of petrol interceptor through the site, and this is addition to the SUDS mitigation index design.

2.10.2 FOUL DRAINAGE

The foul water drainage system for the proposed development has been designed in accordance with the Irish Water Code of Practice and will be separate to the surface water drainage system. The foul water from the development will discharge via soil vent pipes within the buildings by gravity flow before connecting into the existing separate foul sewer network within the development. The foul sewerage for each house will have a separate connection to the proposed 225mm and 150mm diameter foul sewer along the road.

Figure 2.24: Foul Sewer Connection Points



Source: PMcGrail CE

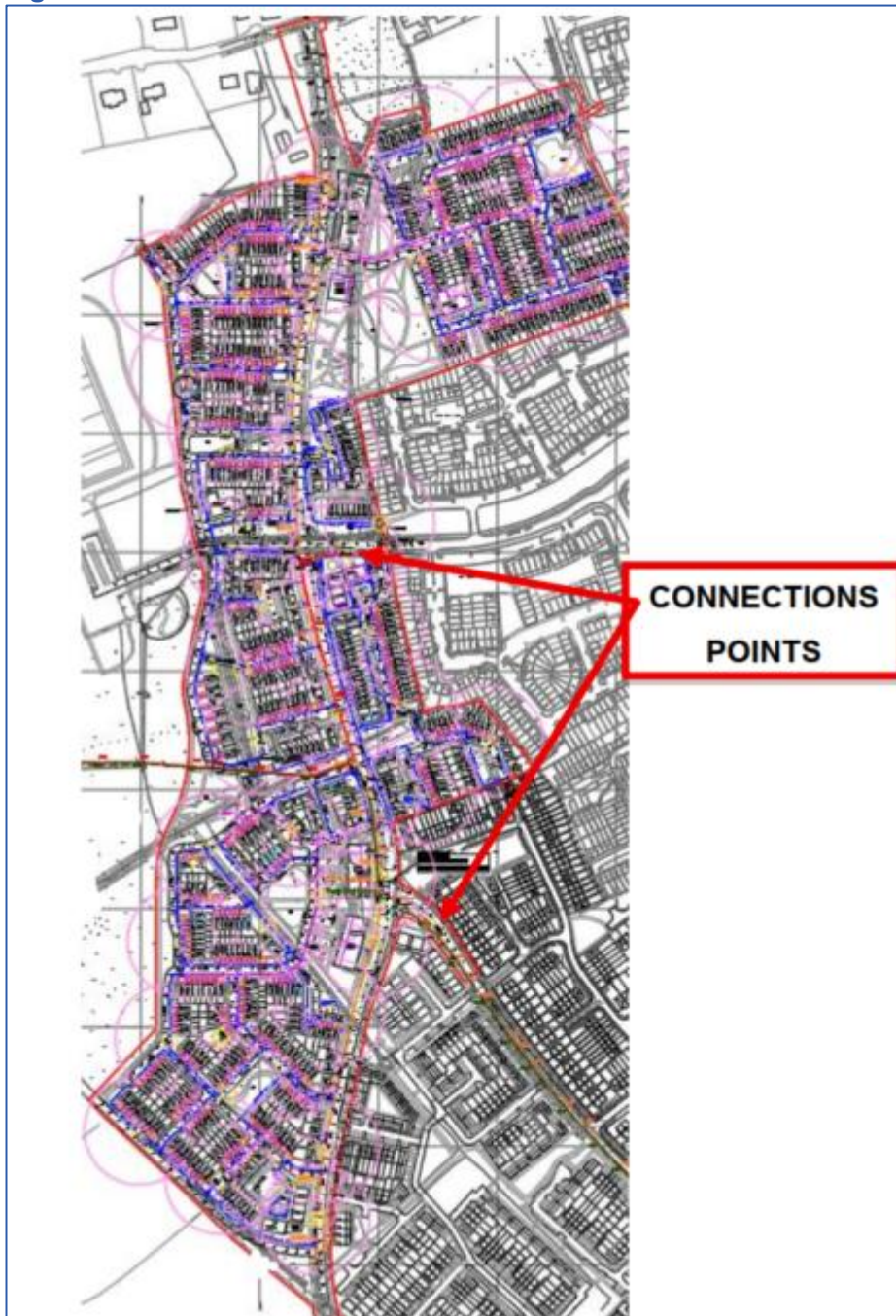
The internal foul network has been designed in accordance with Irish Water Code of Practice for Wastewater Infrastructure. The proposed development will have 6No. of discharge points for the to an existing 225, 300 and 375 diameter foul sewer at Flemington Park, Hamlet Lane and Boulevard Road as

set out above. We refer the Planning Authority to the enclosed updated Confirmation of Feasibility from Uisce Eireann, included in the application. The foul water drainage system for the proposed development has been designed in accordance with the Irish Water Code of Practice and will be separate to the surface water drainage system. The foul water from the development will discharge via soil vent pipes within the buildings by gravity flow before connecting into the existing separate foul sewer network within the development. The foul sewerage for each house will have a separate connection to the proposed 225mm and 150mm diameter foul sewer along the road

2.10.3 WATER SUPPLY

The connection points will be into an existing 300mm watermain pipe at the junction with Boulevard Road and C-Ring Road, existing 400mm watermain pipes at Hamlet Lane.

Figure 2.25: Watermain Connection Points



Source: PMcGrail CE

The proposed network has been designed to comply with Uisce Eireann specification. Individual houses will have their own connections to the distribution main via service connections and boundary boxes. Individual service boundary boxes will be of the type to suit Uisce Eireann and to facilitate possible future domestic meter installation.

The water main layout and details are in accordance with Irish Water Connection and Developer Services, 'Code of Practice for Water Infrastructure' and 'Water Infrastructure Standard Details'.

2.10.4 ELECTRICAL SUPPLY

There is a substation which is been constructed as the previous phase and the power for the proposed development will be fed from this existing ESB substation. The proposed sub stations will provide power to a number of mini pillars which will provide power to the residential dwellings.

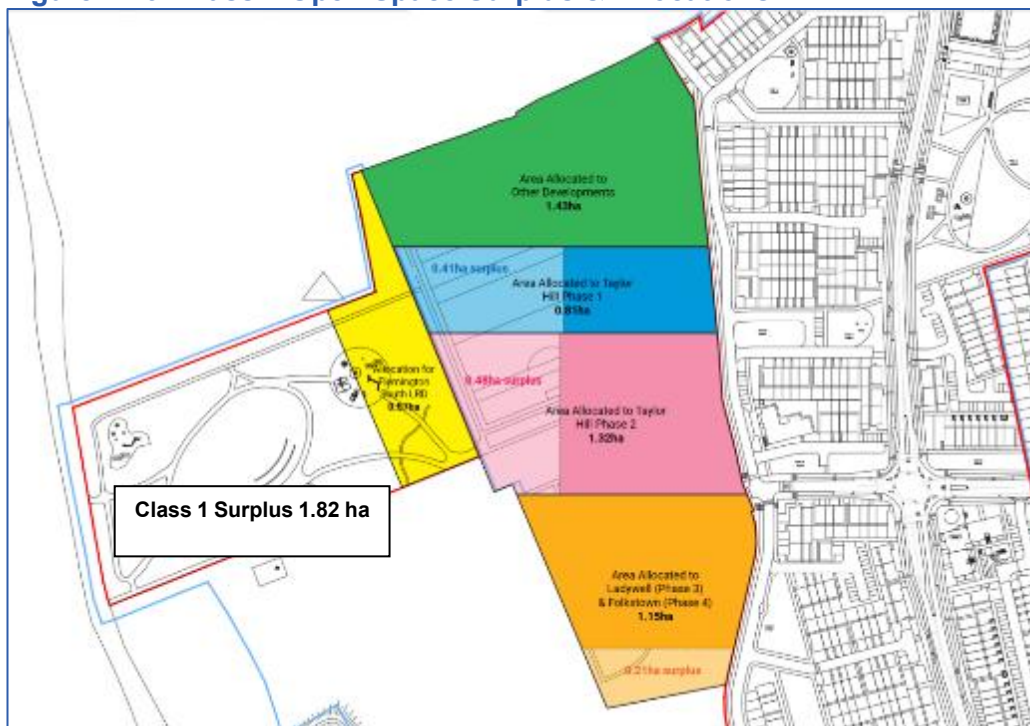
2.11 LANDSCAPE STRATEGY

The proposed development includes some 5.26 hectares of open space comprising Class 1 Open Space (c. 2.39 hectares in the western part of the lands), public open space c.2.87 hectares (equating to 16.6% open space on the RA zoned lands), hard and soft landscaping (including public lighting & boundary treatment) and communal/semi-private open space for the proposed apartment units.

2.11.1 CLASS 1 OPEN SPACE

We would highlight that across the previous phases of development by Glenveagh there is an over provision of open space of the order of 1.1 hectares (across phases 1-4). This current phase of development by Glenveagh requires 1.67 hectares of class 1 open space in its own right. However, when the previous surplus is taken into account the actual provision required is 0.57ha. This application includes some 2.39 hectares of Class 1 open space, which means that there is a surplus of 1.82 hectares of class 1 open space on this phase 5 of development (Flemington South LRD).

Figure 2.26: Class 1 Open Space Surplus & Allocations



Source: DCA

We refer the planning authority to drawing A507-DCA-XX-XX-DR-A-040 prepared by DCA which provides further detail.

Figure 2.27: Main Open Space



Source: Parkhood

The proposed central open space (c. 0.92 hectares) provides a multifunctional space with a generous kick about grass area. A Local Equipped Area for Play has been proposed with the recommended 25m setback from nearest dwellings as per Fingal Space for Play Policy. A hard plaza area has been proposed to the commercial and community pavilion with a potential location for public artwork.

Multiple seating areas have been proposed overlooking the grand lawn area with picnic benches also included offering an area for informal outdoor gathering and dining. Areas of smaller intimate seating with attractive outlooks are offset from the main pedestrian routes and surrounded by ornamental shrub and specimen tree planting.

2.11.2 WESTERN CLASS 1 OPEN SPACE

It is noted that the previously permitted LRD on the subject lands included a playing pitch on the Class 1 open space. It is proposed to significantly enhance the class 1 open space proposals to provide a range of active and passive uses in a much more engaging and higher quality environment.

Figure 2.28: Western Class 1 Open Space



Source: Parkhood

2.11.3 CHILDRENS PLAY PROVISION

Eight designated LAPS, three LEAPS and two fitness areas are proposed across the site with the one in the main public open space being a LEAP (play area) aside a community building.

The play areas will be designed to be both secure and overlooked in line with RoSPA safety advice and European Standard (EN 1176). Play facilities are located well away from any ESB infrastructure.

The play areas will cater for the recreational and educational requirements of children of residents and comply with the distance requirements as set out in the FDP of 25m between them and nearest residential properties. No play areas are located in SUD areas.

As part of the Design Process, Park Hood worked with Kompan (or otherwise agreed) in terms of the design of playgrounds and the types of play equipment that would be appropriate for LEAPs and LAPs.

The total area is based on the calculated provision of 4m² per residential unit (in developments over 50 units).

- 4m2 x 815 units = 3,260 sqm required
- Total Area of Public Play Areas provided = 3,260 sq.m

2.11.4 BOUNDARY TREATMENT

The Boundary Treatments within the development have been selected with the aim of balancing privacy, security, aesthetics, and integration with the surrounding character.

In general, this comprises the following:

- Hedgerows and bin stores to front of properties;
- Hedgerows to periphery of the site
- Timber close-board fencing to rear gardens; and
- Walls to rears of gardens and abutting public realm areas.

2.11.5 HARDSCAPE AND FURNITURE

The selection of hard landscape materials is based on sustainability, permeability and suitability for an urbanised environment and usage. This will include natural and manufactured paving with a consistent selection of materials specified through the proposed spaces in terms of shape, material, form and colour.

The proposals includes for extensive hard landscape elements including for a pathway network to provide a safe and traffic-free environment for walkers, runners and cyclists. Urban furniture is to be located at key locations or spaces along these connections for resident or visitor use.

The majority of the hardworks materiality will be as per the Engineers specification. Parkhood have proposed the hardworks surfacing for open space paths, play areas, areas surrounding apartments and commercial community pavilion.

2.11.6 SOFTWORKS PROPOSALS

Extensive soft landscape works are proposed to assist with visual integration, open space definition and screening both internally and externally. The collective tree planting will, as they mature give this site a far more wooded character than it has at this time.

Bio-diversity measures including bat and bird boxes, relocation of potentially effected ground flora into the open space and laying out of a lowland meadow are also part of the proposed development and will be undertaken under direction from site ecologists.

The landscape works include for planting of trees within public open space, communal open space and along new connection routes through the proposed development that will entail 'semi-mature' or 'extra-heavy standard' size trees to provide an instant impression. The collective trees will, as they mature, assist in merging the proposed development into the surrounding landscape and local views as well as set about creation of the areas new landscape character.

Other landscape works will include structure planting, amenity planting, garden trees, hedgerows and wooded belts. Such planting will more than compensate for the loss of any low-quality vegetation that currently exists and will enhance the overall "green" cover and nature of the site.

The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for management of external spaces or public realm areas for a 20-year period.

Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

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Landscape works to be undertaken by an ALCI approved landscape contractor and in accordance with BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces).

2.12 DESCRIPTION OF THE MAIN CHARACTERISTICS OF THE CONSTRUCTION PHASE

2.12.1 INTRODUCTION

The development of the lands will occur for up to 10 years having regard to the nature of the project and the need for flexibility. The anticipated duration of construction within the 10 years is envisaged at between 0-48 months is expected in the best-case scenario where no obstacles arise. A Construction Environmental Management Plan has been prepared by Paul McGrail Consulting Engineers and is included with the application (see Appendix D Volume III of the EIAR). The CEMP will be developed by the appointed contractor and submitted to Fingal County Council prior to commencement of development and will include the mitigation measures set out in this EIAR and to comply with any relevant conditions attached to a grant of permission. It is important to note that the mitigation measures outlined in the EIAR will ensure that an extension to the construction period will not have a negative impact on the receiving environment.

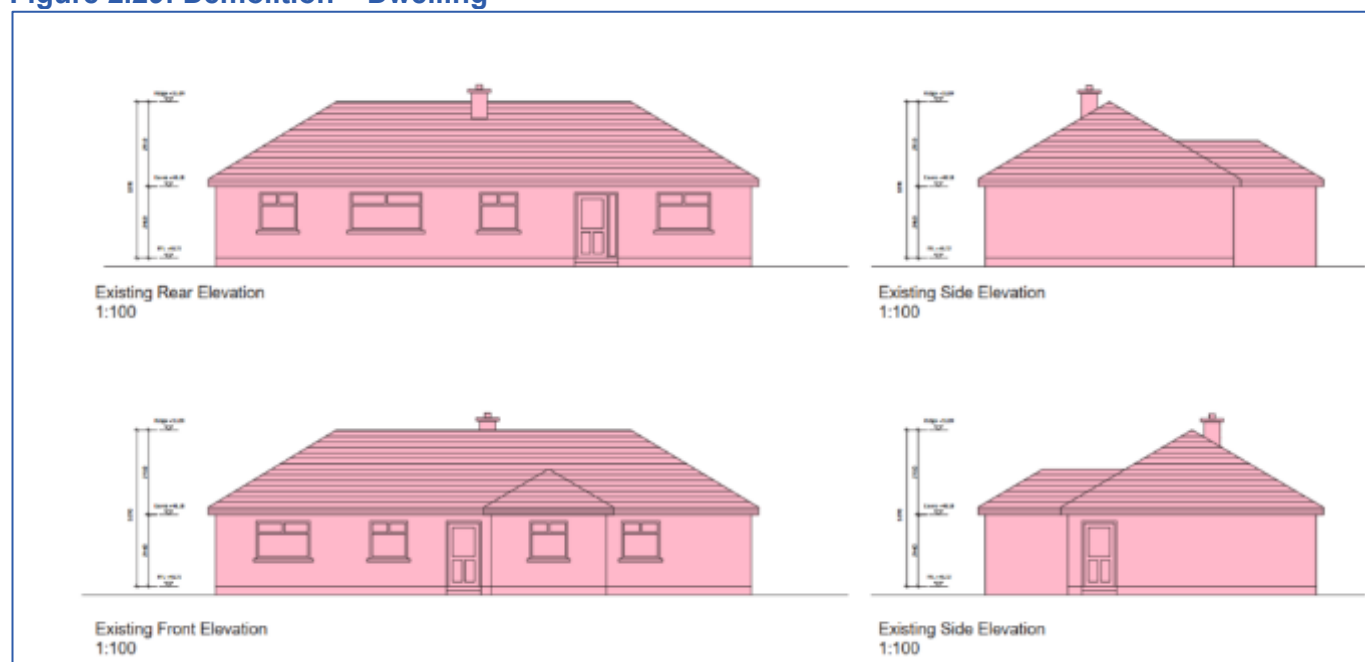
This EIAR presents proposed mitigation measures to ensure that the planned development does not generate significant adverse impacts for residential, educational and working communities in the wider vicinity of the site.

The proposed development, as described, is detailed on the planning application drawings and particulars which accompany the application.

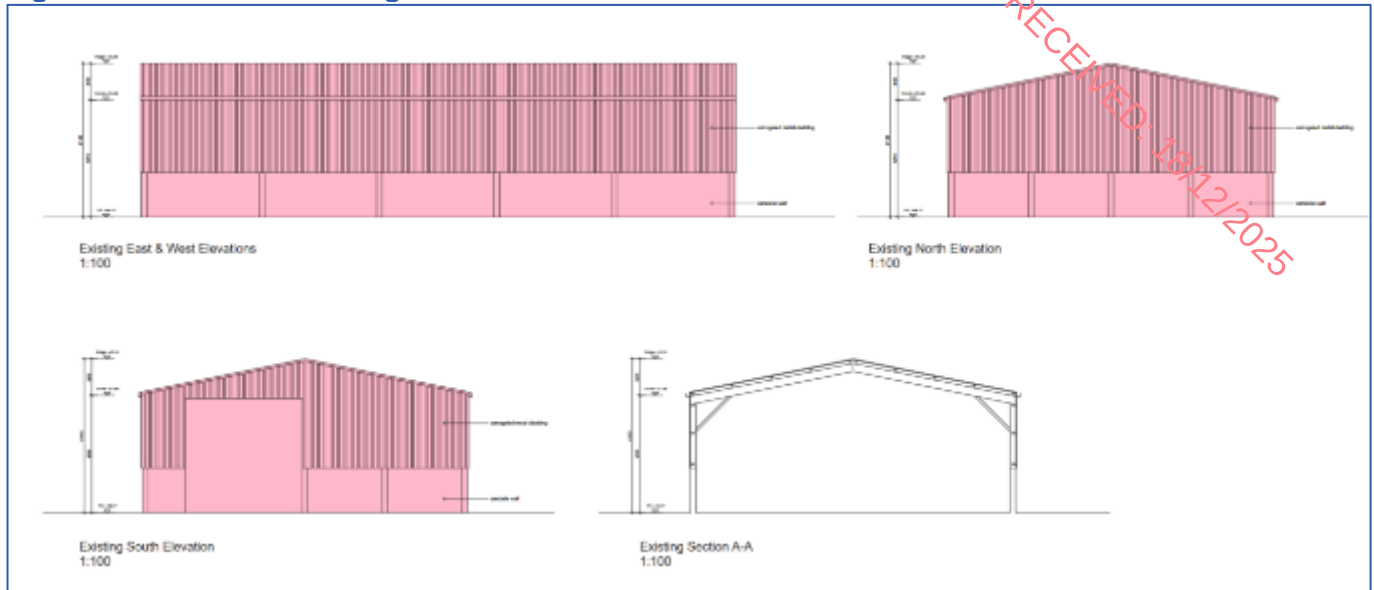
2.12.2 DEMOLITION

The proposals include the demolition of a single storey dwelling (of c. 166 sq. m) along with the dismantling of an agricultural shed located in the northern part of the subject site to facilitate the construction of the C-ring road between the main site and Flemington Lane.

Figure 2.29: Demolition – Dwelling



A507-DCA-XX-XX-DR-A-503 - Existing House - To Be Demolished

Figure 2.30: Demolition – Agricultural Shed

A507-DCA-XX-XX-DR-A-504 - Existing Shed - To Be Demolished

2.12.3 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

The Contractor's CEMP will implement the measures contained in this EIAR and the CEMP (included with the application in Appendix D Volume III of this EIAR as well as the NIS). The CEMP presents the approach and application of environmental management and mitigation for the construction phase of the proposed Project. It aims to ensure that adverse effects from the construction phase of the proposed Project, on the environment are avoided or minimised. It will include the construction stage mitigation included in Chapters 3-15 of this EIAR and as summarised in Chapter 18.

Post planning, the appointed contractor will take ownership of the Construction Environmental Management Plan (CEMP). Prior to any demolition, excavation or construction, the Construction Environmental Management Plan (CEMP) will be updated by the successful contractor. The CEMP will set out the Contractor's overall management and administration of the construction project. The CEMP will be treated as a live document and communicated to all relevant personnel on site.

The Contractor's CEMP will:

- Be maintained and the procedures implemented by the contractor for the duration of the construction period.
- Manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages.
- Detail measures to be carried out to avoid environmental incidents,
- Detail reporting procedures to be followed if incidents occur including details of responsible person in the construction team.
- Include details of training for all site personnel in the implementation of these procedures as part of the site induction process.
- Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

In addition to the EIAR/NIS mitigation measures already included in the CEMP (and mitigation contained in this EIAR), the Contractor will be required to include additional details under the following headings:

- Working hours and days;
- Emergency planning - in the event of a fire, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services;
- Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages);
- Details of construction plant storage, temporary offices and site security arrangements, measures will need to be identified in relation to security of the various sites during construction e.g. controlled access onto site, measures to secure rear gardens, access, etc;
- Truck wheel wash details (including measures to reduce and treat runoff);
- Dust management to prevent nuisance (demolition and construction);
- Site run-off management;
- Noise and vibration management to prevent nuisance (demolition and construction), Work practices, equipment noise control and screening shall be in compliance with BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (together referred to as B.S. 5228);
- Landscape management;

2.12.4 PROGRAMME AND SEQUENCING/PHASING

The assumed programme presented below is indicative of how the project will be constructed, at each stage of the Development some or all of the following activities will be required.

- Archaeological watching brief.
- Geotechnical Investigation.
- Ecology Prep e.g. for Bats.
- Site clearance and enabling works.
- Service infrastructure works.
- Sub-Structure works.
- Super-Structure works.
- External works and finishes.

The Phasing included in the CEMP is indicative to allow for flexibility in terms of the development. In terms of the Delivery and Phasing of Development the following will be the key stages:

- **Phase 1a – Site Set Up**

This task will take up to c.3 months to complete with approximately up to 20 staff employed and will involve consultation to Arborist, Archaeologist and Ecologist/Batman, site clearance (given the lack of existing scrub/vegetation this will not be significant) set up site offices and contractors compound (at the Southern Boundary – as illustrated in Figure 3) and secure the construction site and erection of signage for site security purposes.

- **Phase 1b – Setting out of sites and provision of services**

Given the significant work involved in the provision of drainage services this stage will involve significant work and is estimated to take between 4-5 months and will run in tandem with phase 1d below and will

involve up to 40 construction staff. This will involve the laying of sewers within the site, the installation of attenuation tanks, the provision of footpaths, lighting and roadways. As part of any works (i.e. provision of services) along the public areas/roads in the vicinity of the site, it will be ensured that the surface of the roads/areas will be re-instated to a high standard. Due to the catchment areas the site services associated with the phasing will be constructed as and when required to ensure that all surface water is attenuated prior to discharging to the existing surface water network.

• Phases 1-5 – Construction of Residential Units

The construction of the residential units will, to a certain degree respond to the demand/sale of the units involved, however our client has already had a significant number of enquiries from prospective purchasers, and it is anticipated that the construction progress will reflect this strong demand and will involve up to 150 no. construction staff (depending on the number of units being constructed at any one time). The Proposed Phase 5 will be developed in five phases, and it is expected to take up to five (5) years to complete (subject to planning and market demand).

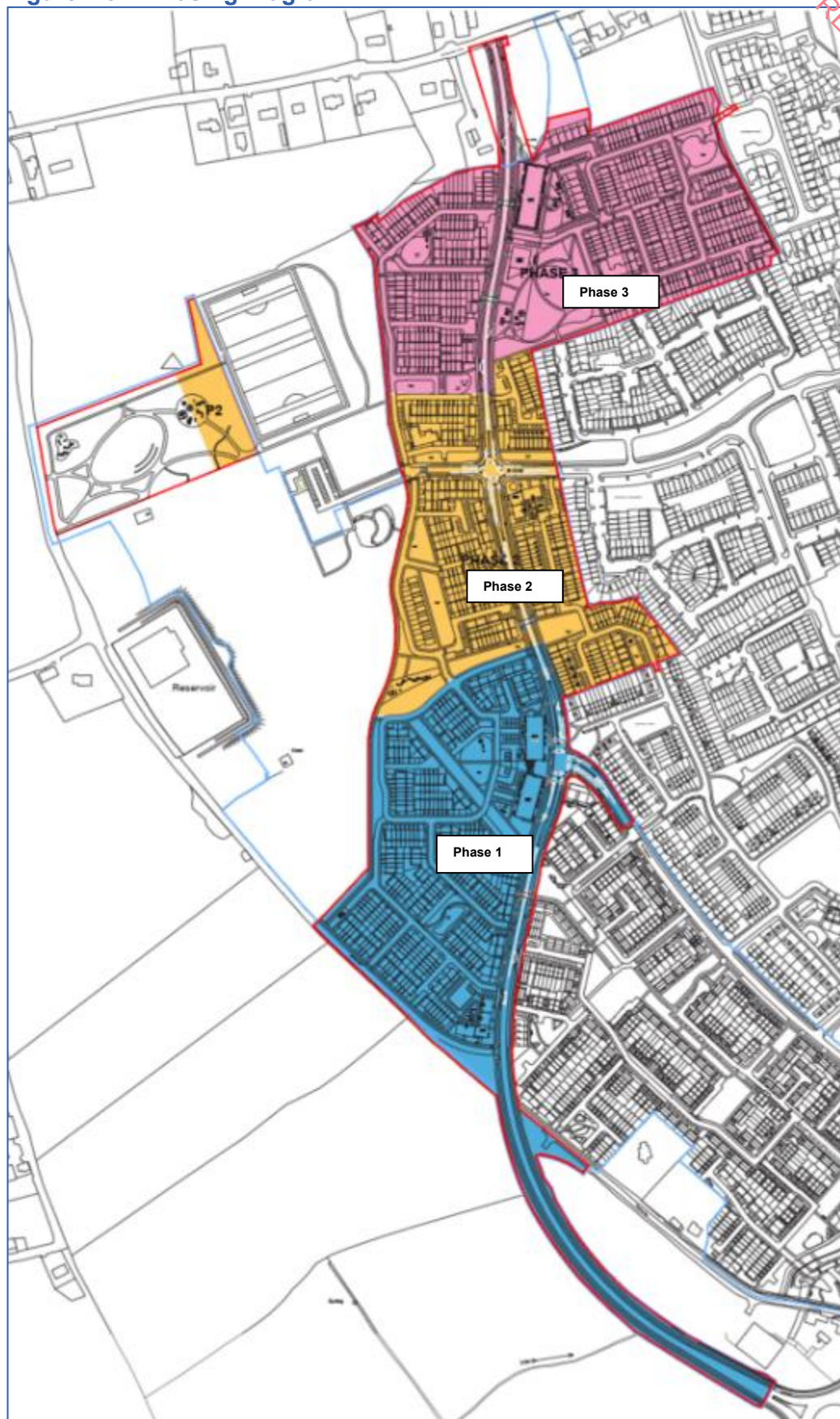
2.12.4.1 Phasing Strategy

PHASE 1			
Dwellings	Units	Unit Area	Total
Apartment Type 1A - Studio	36	32	1,152
Apartment Type 1B - 1-Bed	30	45	1,350
Apartment Type 2A - 2-Bed (4 Person)	15	81	1,215
Apartment Type 2B - 2-Bed (3 person)	7	64	448
Walk-Up Apartment 1A (1-Bed)	12	50	600
Walk-Up Apartment 1B (1-Bed)	2	51	102
Walk-Up Apartment 1C (1-Bed)	2	51	102
Walk-Up Apartment 2A (2-Bed)	6	77	462
Walk-Up Apartment 3A (3-Bed)	2	102	204
House Type B1 (4-Bed) End of Terrace	1	152	152
House Type D1 (3-Bed) Semi-D / End of Terrace	39	92	3,588
House Type E1 (2-Bed) Terraced	98	73	7,154
House Type F1 (3-Bed) Semi-D / End of Terrace	23	103	2,369
House Type F2 (3-Bed) Semi-D / End of Terrace	1	104	104
House Type F3 (3-Bed) Semi-D / End of T / Terraced	24	104	2,496
House Type F4 (4-Bed) End of Terrace	3	154	462
House Type F5 (4-Bed) Detached / Semi-D	5	156	780
Commercial Unit (Apartment Block F)	1	410	410
Total Units	306		23,155m²
Phase Area	8.35ha		
Density	37uph		
POS with RA Zoning	8.45ha	8%	
MIX			
4-Bed	9	3%	
3-Bed	89	29%	
2-Bed	126	41%	
1-Bed	82	27%	

PHASE 2			
Dwellings	Units	Unit Area	Total
Walk-Up Apartment 1A (1-Bed)	6	50	300
Walk-Up Apartment 1B (1-Bed)	2	51	102
Walk-Up Apartment 1C (1-Bed)	2	51	102
Walk-Up Apartment 2A (2-Bed)	6	77	462
Walk-Up Apartment 3A (3-Bed)	2	102	204
House Type B1 (4-Bed) End of Terrace	7	152	1,064
House Type D1 (3-Bed) Semi-D / End of Terrace	32	92	2,944
House Type E1 (2-Bed) Terraced	79	73	5,767
House Type F1 (3-Bed) Semi-D / End of Terrace	13	103	1,339
House Type F2 (3-Bed) Semi-D / End of Terrace	2	104	208
House Type F3 (3-Bed) Semi-D / End of T / Terraced	21	104	2,184
House Type F4 (4-Bed) End of Terrace	2	154	308
House Type F5 (4-Bed) Detached / Semi-D	9	156	1,404
House Type G (3-Bed) Detached	7	92	644
Creche - (2-Storey)	1	530	530
Total Units	190		17,562m²
Phase Area	6.47ha		
Density	29uph		
POS with RA Zoning	1.25ha	18%	
Class 1 POS	6.58ha		
MIX			
4-Bed	18	9%	
3-Bed	77	41%	
2-Bed	85	45%	
1-Bed	10	5%	

PHASE 3			
Dwellings	Units	Unit Area	Total
Apartment Type 1A - Studio	16	32	512
Apartment Type 1B - 1-Bed	31	45	1,395
Apartment Type 2A - 2-Bed (4 Person)	8	81	648
Apartment Type 2B - 2-Bed (3 person)	3	64	192
Apartment Type 2C - 2-Bed (3 person)	6	70	420
House Type B1 (4-Bed) End of Terrace	1	152	152
House Type D1 (3-Bed) Semi-D / End of Terrace	56	92	5,080
House Type E1 (2-Bed) Terraced	141	73	10,293
House Type F1 (3-Bed) Semi-D / End of Terrace	23	103	2,369
House Type F2 (3-Bed) Semi-D / End of T / Terraced	14	104	1,456
House Type F4 (4-Bed) End of Terrace	1	154	154
House Type F5 (4-Bed) Detached / Semi-D	9	156	1,404
Later Living Unit Type LL3 (2-Bed) End of Terrace	2	66	132
Later Living Unit Type LL4 (2-Bed) Terraced	7	66	470
Later Living Unit Type LL5 (2-Bed) End of Terrace	2	66	132
Creche - (2-Storey)	1	530	530
Community Pavilion	1	730	730
Total Units	319		26,063m²
Phase Site Area	7.99ha		
Density	40uph		
POS with RA Zoning	1.12ha	14%	
MIX			
4-Bed	11	3%	
3-Bed	92	29%	
2-Bed	189	57%	
1-Bed	47	15%	

With reference to the Class 1 Open Space, it is being delivered as part of this application. However given the overprovision across a number of phases by Glenveagh, only 0.58 is being allocated to this phase of development, with the remainder to be allocated to future Glenveagh residential sites, within the administrative area of Fingal County Council.

Figure 2.31: Phasing Diagram

A507-DCA-XX-XX-DR-A-041 - Proposed Site Layout – Phasing – note to be agreed with FCC

2.12.5 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

Appendix F of Volume III of the EIAR contains a Framework Construction Traffic Management Plan (FCTMP). The mitigation contained in the FCTMP will be included in the contractors CEMP/CTMP.

In general, the impact of the construction period will be short-term in nature and less significant than the operational stage of the proposed development due to the reduced traffic volumes generated during the construction stage compared to the operational stage. In addition, the peak construction arrivals / departures will be outside of the road network peak hours and therefore will not exacerbate any existing delays encountered during peak times. It is anticipated that the generation of HGV's during the construction period will be evenly spread throughout the day, and such will not impact significantly during the peak traffic period.

Legislation and guidelines relevant to maintaining the safety of the public adjacent to construction works includes:

- Safety, Health & Welfare at Work (Construction) Regulations 2013
- Traffic Management Guidelines (2019), Department of Transport
- Department of Transport Traffic Signs Manual (2019) – Chapter 8 Temporary Traffic Measures and Signs for Roadworks
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
- Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & Design Manual for Urban Roads & Streets (DMURS)

The framework CTMP addresses likely human health risks and documents construction practices and measures that can be adopted to minimise any effects on road users during the proposed development's construction phase. The framework CTMP's overarching objectives are to:

- mitigate likely construction traffic effects on nearby local roads by routing construction traffic along the regional and national road network, where possible;
- construction traffic movements will be scheduled to avoid school pick-up and drop-off times in order to minimise potential conflicts with school-related pedestrian and vehicular activity;
- avoid conflict between construction traffic activities and general traffic/ pedestrians/ cyclists in the general vicinity of the site; and
- set out appropriate construction staff car parking arrangements so as to avoid overspill car parking on the local road network and resulting potential for traffic hazards.

The Framework CTMP will be updated by the Contractor prior to commencement of development and it will include the mitigation measures set out in this EIAR.

In accordance with the CTMP, the set HGV haulage routes are to be adhered to, as illustrated in below unless otherwise agreed with FCC.

The site access arrangements have been developed to reflect site-specific considerations emerging from the site assessment (see Section 3 of this Report). In addition to reflecting identified routes to/ from the site, a central consideration in determining the current access proposals is vehicular, cyclist and pedestrian safety (including construction staff).

Access to and from the development site from the surrounding road network will be via the R122, with all or most of the HGV traffic expected to travel to the site from the west, without entering Balbriggan Town (subject to contractor requirements). Construction traffic will then turn into Boulevard Road at the R122/Boulevard Road Junction and subsequently enter the site via the south entrance. Egress from the site would be via the same route. Following implementation of the southern section of the C-Ring Road, HGV traffic shall be directed to utilise this route to access/ egress the R122.

2.12.5.1 Construction Staff Parking and Mobility Management

Construction Staff Parking

All construction staff parking will be accommodated in temporary parking areas within the site, which will have capacity for ca. 100 no. vehicles. There will be a maximum of 150 no. staff on site at any one time (as outlined in Section 8.2), however as significant amounts of car sharing are expected as various disciplines will arrive together and also as some staff will arrive by public transport, walking and cycling, no more than 80 staff cars are expected to arrive on the site on a typical day, In addition to occasional visitor cars. As a result, no on-street construction parking and no overspill parking impacts on the adjoining local road network are envisaged for the duration of construction activities.

Construction Staff Mobility Management

A maximum of 150 no. construction staff will be based on-site during peak construction activity periods. In addition, daily visitor arrivals to the site, including architects, engineers and other Client representatives are anticipated throughout the construction programme.

A Construction Staff Mobility Management Plan (CSMMP) for the site will be developed by the contractor and implemented prior to construction works commencing. Key elements of the CSMMP include:

- provision of a storage compound on-site to accommodate tools and equipment, and reduce the need to travel by car or van; and
- information and promotion of available public transport services in the site's vicinity.

A detailed Construction Environmental Management Plan will be prepared post-planning by the selected construction contractor expanding on the outline plan, and the document will be submitted for approval to FCC prior to the commencement of any construction works. The CEMP will include the mitigation contained in this EIAR including the Framework CTMP.

The CTMP will ensure that suitable temporary traffic works, and road safety measures are put in place during the construction phase. The plan will ensure that any required traffic management measures are put in place to minimise the impact on local road users. Construction related traffic will access/ egress the site via the R122 and Boulevard Road. In general, the impact of the construction period will be temporary in nature and will cease following completion of the works. No significant effects are likely to occur due to construction phase traffic.

The applicant will appoint a dedicated construction manager and construction traffic manager. The construction traffic manager will be required to coordinate and schedule all deliveries to the site, ensure that the access roads are kept clear of mud and debris, advise haulage contractors on the appropriate routes to and from the site, and to adhere to good traffic management principles. In this way, the likely effects of the construction phase can be appropriately managed. No significant effects are expected.

2.12.6 OUTLINE 'FLEMINGTON LANE DEVELOPMENT' CTMP

Following the identification of the CTMP's strategy presented in the preceding section of this Section, individual plan tasks are set out below and include:

2.12.6.1 Traffic Management Coordinator (TMC)

A site-based TMC shall be appointed upon award of the contract to oversee all activities relating to the CTMP's development and implementation. The TMC will assume responsibility for all traffic movements and will coordinate closely with and as a part of the construction teams on site.

2.12.6.2 Just-In-Time Deliveries

Scheduled in advance, where feasible, with direct live contact with suppliers to intervene as needed to optimise arrival times to the site.

2.12.6.3 Sourcing of Construction Materials

Within the constraints of performance, durability and cost, construction materials will, where feasible, be sourced from local suppliers and manufacturers, thus, minimising the impacts of construction traffic.

2.12.6.4 Construction Traffic Timing

Arising from the construction methodology, programme and working hours, an estimated maximum of 4-6 no. HGVs per hour is envisaged during the peak construction period, contributing to a very small increase in background traffic on local roads. As such, delivery timing restrictions are deemed unnecessary.

2.12.6.5 Construction Working Hours

The site will operate from 07:00hrs to 19:00hrs on weekdays and from 07:00hrs to 14:00hrs on Saturday. No works will be undertaken on Sundays or Bank Holidays without the consent of FCC.

2.12.6.6 Construction Staff Mobility Management Plan (CSMMP)

A CSMMP will be developed for the site and will apply to all construction staff (including sub- contractors). The CMMP will seek to promote and inform staff in relation to non-car based means of accessing the site. To facilitate public transport use amongst construction staff, secure on-site storage facilities for equipment and tools will be provided.

2.12.6.7 Construction Signage Plan

A signage plan will be developed and implemented, providing advance warning of the construction access junction, and likelihood of slow-moving turning traffic to/ from the site. Figure 1.2 (overleaf) provides an outline of the site signage plan.

2.12.6.8 Sub-Contractors Obligations

Compliance with the CTMP will form part of written contracts between the principal contractor and nominated sub-contractors. The TMC will be responsible for monitoring the sub-contractor's performance in relation to all CTMP requirements, including all staff under their direct control.

2.12.6.9 Loading/ Unloading Arrangements

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Methods of handling materials on site will be in accordance with construction site health and safety requirements.

2.12.6.10 Construction Vehicle Management & Cleaning

Where required, construction vehicles will be inspected prior to exit from the site to ensure that dirt is not spread onto the adjoining road, and systems shall be put in place to facilitate this process, including an on-site cleaning area and/ or rumble grid located within the site prior to the exit location.

2.12.6.11 Statutory Approvals

The principal contractor will comply at all times with FCC requirements, including but not limited to hoarding/ scaffolding licences, skip licences etc.

2.12.6.12 CTMP Monitoring and Maintenance

The CTMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CTMP will be in accordance with FCC requirements.

2.12.7 LIAISON WITH NEIGHBOURING PROPERTIES

A monitoring regime will be put in place to protect neighbours & neighbouring properties with a full and detailed vibration, noise, dust, and groundwater monitoring regime put in place for the duration of the works.



The Contractor will appoint a competent person to be referred to as the Surveying, Instrumentation and Monitoring Subcontractor (MSC) who will implement the monitoring measures during the construction phase described in this EIAR.

The MSC will be responsible for preparing or organising the preparation of condition surveys of surrounding buildings, walls, hardstanding area etc. prior to the carrying out of any works on site. The condition surveys will be carried out to a level of detail, suitable to the nature and extent of conditions encountered in order to obtain an understanding of the general structural condition of the property/structure and/or external environments.

It is proposed that vibration monitoring will be conducted at properties adjacent to or within 50m of the site as required using calibrated vibration monitors and geophones capable of transmitting live text and email alerts to ensure that if vibration levels approach or exceed specified warning and limit values.

2.12.7.1 Community Updates

During the construction phase, the contractor will provide regular updates on the progress of the construction of the development.

2.12.8 EXISTING GROUND CONDITIONS

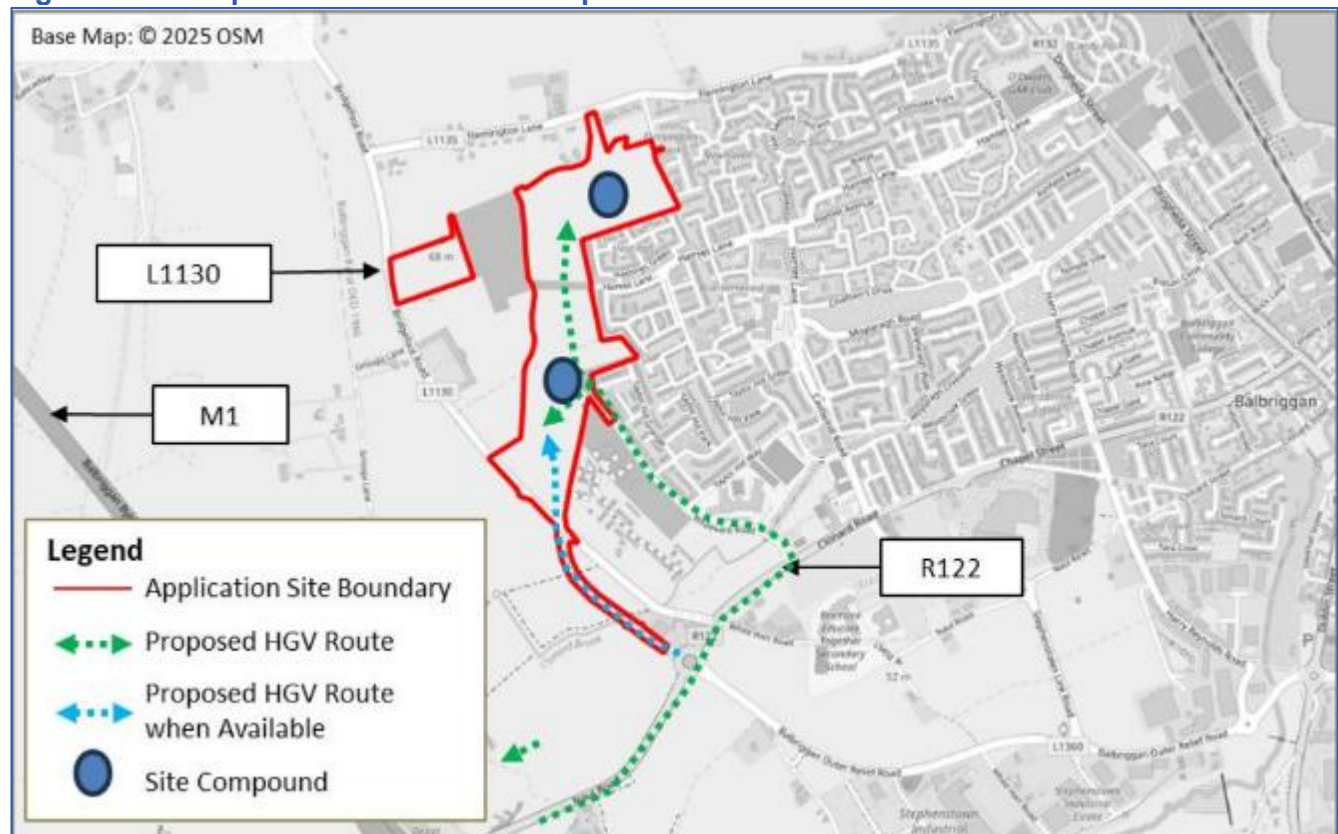
Ground Conditions included topsoil with some soft sandy Clay extends to depths between 0.2m and 0.5m BGL (Below Ground Level). Cohesive deposits described as firm brown sandy gravelly CLAY were generally encountered across / throughout the site underlying the topsoil and extends/continues to depths ranging from 1.0m to 2.3m BGL. Granular deposits include a thin band of angular gravel which was encountered at the base of BH04A, extending from 2.0m to 2.5m BGL. Rig and excavator refusal in several boreholes and trial pits has indicated the presence of relatively shallow weathered Limestone Bedrock. Rock horizon has been noted at average depths between 1.0m-3.0m BGL.

The Stratum then increases to stiff consistency and boreholes continued to a final refusal depth ranging from 2.5m to 4.9m BGL. Of the 4 NO. Boreholes drilled, Borehole refusal was recorded at shallow depths in several locations (BH01-BH04). According to IGSL (2019), final refusal depths should not be taken as indicative of bedrock horizon. Proof core drilling to confirm depth to bedrock (bedrock parameters) was not scheduled for this project.

2.12.9 SITE COMPOUND FACILITIES AND PARKING

Temporary construction compounds will be required to provide stores, offices, material storage, parking and welfare facilities for the contractor and resident engineer's staff. The exact location, layout and size of the compounds will be at the discretion of the contractor with the agreement of FCC. It is initially envisioned to have 2 main compound locations, one at the junction of the Boulevard Road/C-Ring Road and the second located in the northern part of the site to provide convenient access to the existing arterial road network and build out of the C-Ring Road. Secondary compounds may also be used at intermediate locations if required. Alternative locations may be agreed with Fingal County Council in advance of commencement of the works.

Figure 2.32: Proposed Construction Compound Locations & Access Routes



Note: Locations to be agreed with FCC

The construction compound will include:

- Adequate welfare facilities such as washrooms, drying rooms, canteen and first aid room as well as foul drainage and potable water supply.
- Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be protected from contamination by any construction activities or materials.
- The construction compound will be enclosed by a security fence.
- Access to the compound will be security controlled, and all site visitors will be required to sign in on arrival and sign out on departure.
- A permeable hardstand area will be provided for staff car parking.
- A separate permeable hardstand area will be provided for construction machinery and plant.
- The construction compound will include a designated construction material recycling area.
- A series of way finding signage will be provided to direct staff, visitors and deliveries as required.
- All construction materials, debris, temporary hardstands etc. in the vicinity of the site compound will be removed off-site on completion of the works.
- The construction compound will include adequate welfare facilities such as washrooms, drying rooms, canteen and first aid room as well as foul drainage and potable water supply.
- Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be protected from contamination by any construction activities or materials.
- The construction compound will be enclosed by a security fence.
- Access to the compound will be security controlled, and all site visitors will be required to sign in on arrival and sign out on departure.
- A permeable hardstand area will be provided for staff carparking.
- A separate permeable hardstand area will be provided for construction machinery and plant.
- The construction compound will include a designated construction material recycling area.
- A series of way finding signage will be provided to direct staff, visitors and deliveries as required.
- All construction materials, debris, temporary hardstands etc. in the vicinity of the site compound will be removed off-site on completion of the works.
- Site security will be provided by way of a monitored infrastructure systems such as site lighting and CCTV cameras, when deemed necessary.

2.12.9.1 Site Accommodation & Site Parking

On site accommodation will consist of:

- Staff welfare facilities (toilets, canteen, offices/meeting rooms)
- Materials storage areas and drop off Temporary water supply, electricity supply and foul drainage will be required for the new facilities.
- Connections to electricity & water are available close to the site boundary.
- Foul drainage with need to be taken to a vented holding tank for regular removal by suction tanker.
- Limited parking (c. 40-60 spaces depending on stages of construction) for construction personnel will be provided within the site for the period of construction.
- The site is within walking distance of the main street which is served by a Dublin Bus route. The contractor parking areas will be contained within the construction compound.

2.12.9.2 Hours of Working

It is proposed that standard construction working hours should apply i.e.:

- 7am – 7pm Monday to Friday
- 8am – 2pm Saturdays (or as permitted by Fingal County Council)
- No works Sundays or on Public Holidays
- Work outside of normal hours shall only take place where written permission has been received from Fingal County Council. The location of any works anticipated to be undertaken outside normal working hours shall be limited and strictly defined

Any works proposed outside of these periods shall be strictly by agreement with the Local Authority in advance (such as Concrete pouring, foul or water main connections). Deliveries of material to site will be planned to avoid high volume periods. 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. There may be occasions where it is necessary to have deliveries within these times. The Contractor will develop, agree, and submit a detailed Construction Traffic Management Plan, to FCC, for the project prior to commencement. The CTMP will implement the relevant mitigation measures contained in the EIAR.

2.12.9.3 Temporary Construction Works

During the construction phase it will be necessary to provide contractor welfare facilities for the workers. A site office and staff welfare facilities will be installed at a suitable location centrally within the overall site as part of the construction compound. All surplus plant and materials shall be stored in this location when not in use. Welfare facilities will include a canteen, drying room, toilets and first aid. Power will be provided using a small petrol generator. The petrol generator and fuel storage containers used for various items of plant will be located within a sealed containment bund.

Temporary portable toilet facilities will be provided on site. These units will be maintained and the waste collected therein will be disposed of using an appropriate contractor. Storage areas will be clearly identified and agreed with all relevant parties in advance of construction.

2.12.9.4 Hoarding and Site Segregation

The new works will be hoarded off or fenced off from the public at all times. The hoarding alignment and specification are to be confirmed by the Contractor and agreed with Fingal County Council prior to commencement. Controlled access points to the site, in the form of gates or doors/turnstiles, will be kept locked for any time that these areas are not monitored (e.g. outside working hours). During working hours, a gateman will control traffic movements and deliveries at any active site access to ensure safe access and egress to & from site onto the public roads. All personnel working on site must have a valid Safe Pass card and be inducted by the Main Contractor with regard to site specific information.

2.12.9.5 Noise and Dust Management

The main contractor will be required to be accredited with ISO14001 Environmental Management Systems. The main contractor will be required to mitigate the impact of the construction works and the mitigation measures set out in this EIAR.

2.12.9.6 Reinstatement / Road Cleaning

Prior to the works commencing, detailed photographic surveys (condition schedules) of adjoining walls, roads, footpaths, fences etc. is to be prepared. Copies of the relevant parts are to be made available to adjoining owners and FCC. This record will form the basis of assessing repairs to adjoining areas in the future should a dispute arise as to their cause. Roadways are to be kept clean of muck and other debris. A road sweeping truck is to be provided as necessary, to ensure that this is so.

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Reinstatement at completion of the works will involve:

- Testing and cleaning of all watermains in the development to the requirements of the UE / FCC prior to connection to the public watermain. This will reduce the risk of contamination to the public water supply when the new network is connected to the system.
- Repair of any damage to any adjacent public roadways, kerbs, grass verges etc. in accordance with FCC requirements.
- Reinstatement of all excavations to the requirements of FCC.
- Leaving the area in a neat and clean condition, removing all deleterious materials that may have been deposited during construction works.

2.12.10 EMISSIONS AND WASTE

2.12.10.1 Water Demand

The water consumption is a function of the usage of the development. The proposed development will not increase water demand significantly and no significant impact on the water supply network is envisaged.

2.12.10.2 Effluents

During the construction phase, the foul flows generated on site will initially be tankered off site to a licensed facility until a temporary connection to the public foul drainage network has been established.

Details of the impacts and mitigation measures for surface water and foul drainage are recorded at Chapter 13 of this Environmental Impact Assessment Report.

2.12.10.3 Construction Waste Disposal Management

Chapter 11 of the EIAR (Material Assets – Waste Management) and the Resource Waste Management Plan, prepared by AWN (included with the application in Appendix E Volume III of the EIAR), provides detail on the construction related waste management for the proposal.

The Objective of the Waste Management Plan is to minimise the quantity of waste generated by construction activities, to maximise the use of materials in an efficient manner and to maximise the segregation of construction waste materials on-site to produce uncontaminated waste streams for off-site recycling.

All surplus materials will be removed offsite in accordance with waste management legislation/article 27 notification.

2.12.10.4 Contaminated Soil

If detected, the management of asbestos at the site and off-site transport will be undertaken by an appointed specialist contractor in accordance with an asbestos management plan for the works. Chapter 11 provides more information.

2.12.10.5 Emissions

The principal forms of air emissions relate to discharges from motor vehicles. Exhaust gases from motor vehicles will arise from car parking areas and will be discharged directly to the atmosphere. Car parking for motor vehicles is provided at surface level. Chapters 7 and 8 of the EIAR sets out the potential impacts and mitigation in respect of Air Quality and Climate.

Noise may be considered in two separate stages, during construction, and when the development is operational. Construction related noise impacts are an inevitable short term limited inconvenience feature

which, in general, is accepted by members of the public, subject to the standard controls typical of planning conditions attached to urban based development projects. These impacts can be reduced in a number of ways. It is standard practice to limit construction to normal working hours during the day. In addition, there are a number of regulations relating to noise during construction which the contractor will be expected to adhere to throughout the construction phase. Chapter 9 of the EIAR sets out the potential impacts and mitigation in respect of Noise and Vibration.

2.12.10.6 Electricity Demand

2.13 ALTERNATIVES EXAMINED/CONSIDERED

This section of the EIAR sets out the main alternatives that have been considered for the Proposed Project and provides an indication of the main reasons for the final scheme choice, taking into account the effects on the environment in the context of the characteristics of the site (receiving environment). The EIA Directive (2014/52/EU) requires that Environmental Impact Assessment Reports include:

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

Section 3.41 of the EPA Guidelines 2022 outline that in some cases “Clearly, in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant ‘alternative location’ for the upgrading of an existing road but there may be alternative design options.”

Article 94 and Schedule 6, paragraph 1(d) of the Planning and Development Regulations 2001, as amended, requires the following information to be furnished in relation to alternatives:

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

The presentation and consideration of various alternatives investigated by the project design team is an important requirement of the EIA process. This section of the EIAR document provides:

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

This serves to indicate the main reasons for choosing the development proposed, taking into account and providing a comparison the environmental effects. Alternatives may be described at three levels:

- Alternative Locations.
- Alternative Designs.
- Alternative Processes.

The DHPLG 2018 EIA Guidelines state:

“Reasonable alternatives may relate to matters such as project design, technology, location, size and scale. The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant. It is generally sufficient for the developer to provide a broad

description of each main alternative studied and the key environmental issues associated with each. **A 'mini- EIA' is not required for each alternative studied.** (Emphasis added).

This approach above is reflected in section 3.4.1 of the EPA EIAR Guidelines 2022 which state:

"The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."⁸

Pursuant to Section 3.4.1 of the EPA EIAR Guidelines 2022, the consideration of alternatives also needs to be cognisant of the fact that *"Clearly, in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location' ..."*

The EPA EIAR Guidelines 2022 are also instructive in stating:

"Analysis of high-level or sectoral strategic alternatives should not be expected within a project level EIAR... It should be borne in mind that the amended Directive refers to 'reasonable alternatives... which are relevant to the proposed project and its specific characteristics.'"

The consideration of the main alternatives in respect of the development of the subject lands was undertaken by the Design Team and has occurred throughout an extensive and coordinated decision-making process, over a considerable period of time. The main alternatives considered are identified below.

2.13.1 ALTERNATIVE LOCATIONS

The 2018 Department of Housing Planning and Local Government (DHPLG) Guidance on the preparation of EIARs notes specifically that the consideration of some types of alternatives, such as alternative locations, may not be appropriate in all cases. EIA is concerned with projects and the Environmental Protection Agency's guidelines (2022) state that, in some instances, neither the applicant nor the competent authority can realistically be expected to examine options that have already been previously determined by a higher authority, such as a national plan or regional programme for infrastructure which are examined by means of a Strategic Environmental Assessment (SEA), the higher tier form of environmental assessment. As the subject site has been identified to accommodate the uses proposed, it is not considered appropriate to evaluate alternative locations in the EIAR.

The EIAR Guidelines 2022 also note that:

"Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans. Assessment at that level is likely to have taken account of environmental considerations associated, for example, with the cumulative impact of an area zoned for industry on a sensitive landscape."

This is of relevance to the proposed development of the site. On the strategic or *'higher'* matters of already determined policy, we refer to the Fingal County Development Plan 2023-2029 which make reference to strong policies in support of the development of Balbriggan.

2.13.2 DO NOTHING ALTERNATIVE

A *"do-nothing"* alternative was considered to represent an inappropriate, unsustainable and inefficient use of these residential zoned land; particularly having regard to the opportunity to provide much needed

⁸ Ref CJEU Case 461/17

housing for Fingal County Council. The suitability of the lands for development, within an established development area of Balbriggan and the application site's location adjacent to existing amenities, schools, public transport and good road infrastructure were also key considerations.

The site is zoned for residential development under the Fingal County Development Plan 2023-2029 and as such, consideration of alternative sites is not pertinent. In effect, an alternative location in this instance i.e., a '*do-nothing*' alternative for the subject site, would mean that these residential zoned lands would not be utilised for the purposes of meeting the need for new residential accommodation within Balbriggan. If development does not occur sequentially from the existing development footprint, it is likely that pressures for the development of land which is either un-zoned or un-serviced and not as close to the town centre would be greater. This would lead to a dispersed and unsustainable form of development.

A "*do-nothing*" scenario was considered to represent an inappropriate, unsustainable and inefficient use of these strategically located residential zoned lands, within Balbriggan. The suitability of the lands for development, within an established development area of the County were also key considerations.

From an environmental perspective a '*do nothing*' approach is otherwise likely to result in a neutral impact on the environment in respect of material assets, land, water, air, climate, cultural heritage, biodiversity and landscape. Ultimately, a '*do-nothing*' scenario was considered to represent an inappropriate, unsustainable and inefficient use of these strategically positioned, zoned, urban lands.

2.13.3 ALTERNATIVE USES

In addition to residential use, there are other land uses which are permitted in principle on these lands. It is not considered that an alternative comprising one of the alternative uses would result in the best use of these lands, particularly having regard to the general acknowledged need for housing. The environs of the subject site are largely residential in nature interspersed with some commercial/retail and educational uses. In this context, the proposal now the subject of this application comprises appropriate land uses in accordance with the proper planning and sustainable development of the area. Nevertheless, the proposed development includes some small scale 'top-up' retail floorspace, which is allowable under the land use zoning objective.

2.13.4 DESCRIPTION OF ALTERNATIVE PROCESSES

The relevance of alternative processes and technologies is limited in the case of this EIAR having regard to the nature of the proposed development, which is primarily for a residential development. The Climate and Energy Statement prepared by ENX Consulting Engineers identifies the energy standards with which the proposed development will have to comply and also sets out the overall strategy that will be adopted to achieve these energy efficiency targets. The dwellings will be required to minimise overall energy use and to incorporate an adequate proportion of renewable energy in accordance with Building Regulations Part L 2022, Conservation of Energy & Fuel.

The building fabric has been selected to meet the requirements of Part L building Regulations. The incorporation of these elements and technologies into the scheme will ensure higher performance and improved building sustainability when compared to alternative out-dated, less energy efficient materials and technologies.

It is noted the proposed construction works comprise relatively standard building construction processes, which comprise some timber frame elements which are more sustainable compared to 100% block work. With reference to the operational phase, no new, unusual, or technically challenging operational techniques are required, as such no alternative operational processes have been considered.

2.13.5 ALTERNATIVE MITIGATION MEASURES

The mitigation measures as outlined in the various chapters of this EIAR are considered appropriate to the location, nature and extent of the project and its potential impacts. Alternative mitigation strategies were considered so as to arrive at the optimal solution for the project.

2.13.6 ALTERNATIVE DESIGNS AND LAYOUTS

The proposed residential development has been prepared in accordance with the requirements of the National Planning Framework, the Regional Spatial and Economic Strategy for the Mid-East area as well as the relevant Section 28 Guidelines including those relating to Urban Development and Urban Heights 2018, the Apartment Guidelines 2025 and the Compact Settlement Guidelines 2024 as well as where relevant the Fingal County Development Plan 2023-2029 and has been the subject of pre-application discussions with the Planning Authority prior to lodgement of the planning application.

Alternative site layouts and siting progressed throughout the design process as part of the development, in order to minimise the impact on the receiving environment at the earliest opportunity. The initial stage involved a constraints analysis of the land within the proposed development site to identify all high-level constraints and aggregate them against the site to allow a suitable layout to be developed.

The following analyses alternatives development options considered for the site which were incorporated into the scheme as the proposals progressed through pre-application discussions with the Planning Authority.

The design approach for the proposed development is presented in the Architectural Design Statement prepared by DCA which is submitted as part of the planning application, and it should be read in conjunction with this chapter of the EIAR.

2.13.7 ALTERNATIVE NO. 1 - FCC REG. REF. LRD0006/S3 & ABP-319343-24

The first alternative considered by the design team was to consider the permitted layout under Planning Reg. Ref. F07A/1249/ABP Ref: PL06F.231457 & F08A/1329.

Figure 2.33: Site Layout FCC Reg. Ref. LRD0006/S3 & ABP-319343-24



2.13.7.1 Comparison of Environmental Effects

Having reviewed the proposal it was considered that the layout could be enhanced by utilising the Compact Settlement Guidelines 2024 to provide a more contemporary development with more own door housing.

Alternative no. 1 proposed the removal of the hedgerows which is negative from a biodiversity point of view. With reference to soils and water, the schemes are broadly neutral as they would entail the construction of a residential development, using standard construction techniques. The overall layout and

site configuration is driven by the key structuring principles of the sites relationship with the Boulevard Road, new C-Ring Road (internally within the site), the east west link through the site, as well as the existing residential areas to the east.

The proposal would have resulted in the removal of more hedgerows leading to a negative impact on hedgerows and biodiversity. The impacts to Cultural Heritage would be neutral as the development of the lands would result in the preservation of archaeological features in all alternatives.

2.13.7.2 Alternative no. 2 S.247 Meeting

The proposed development presented at the S.247 meeting related to the construction of 755 no. residential units comprising 579 no. 2-storey houses and 176 no. 3-4 storey duplex apartment blocks. The development will also include 2 no. crèches providing 216 childcare spaces, 2 no. commercial units, a community pavilion including gym, playing pitch in the western portion of the development, series of public open spaces includes a linear park in the southern part of the site and 2 no. kick-about grass areas in the northern section of the site including natural play. A total of 2.22 ha of public open space is provided, equating to c. 13% of the site area.

Figure 2.34: Alternative no. 2 S.247 meeting January 2025



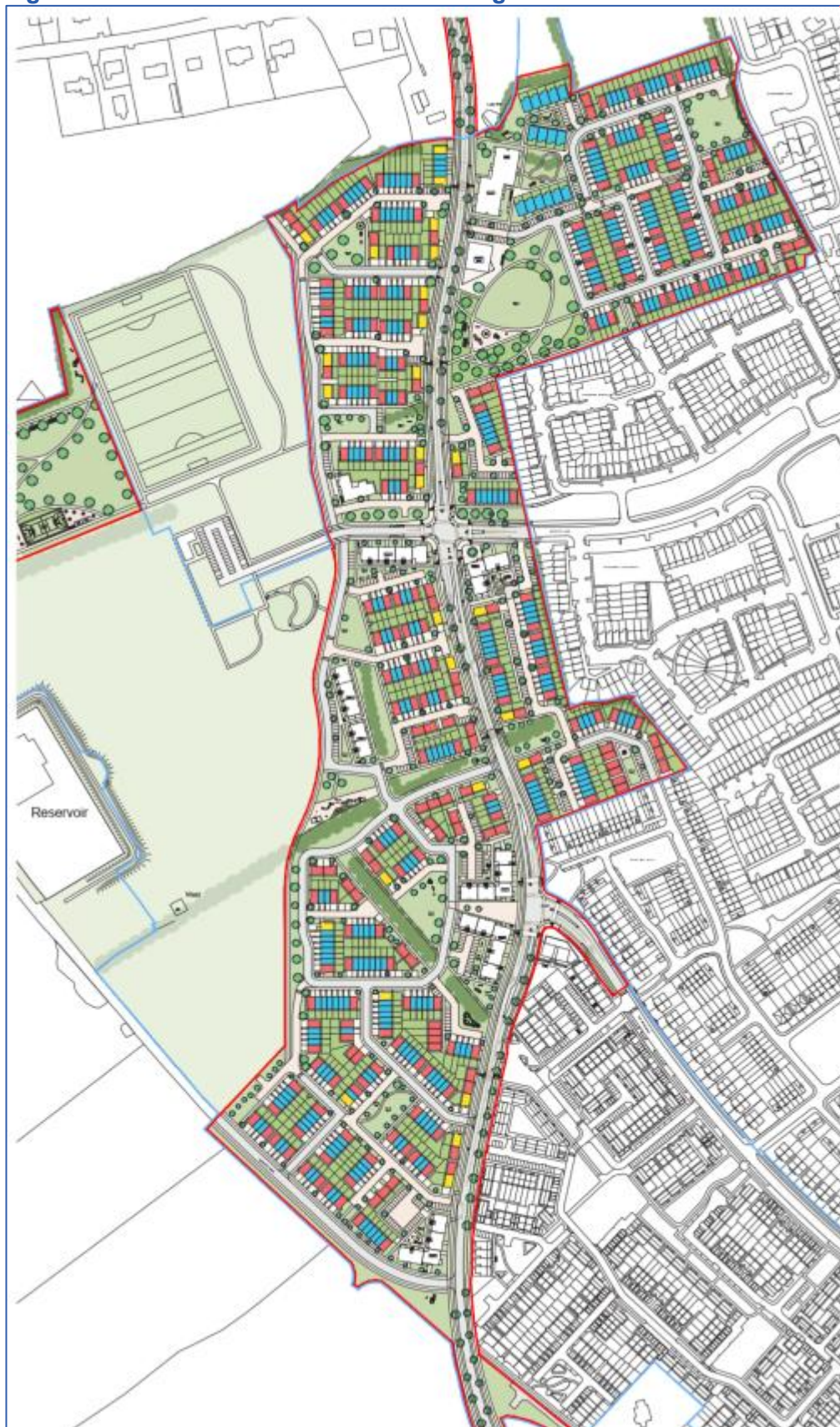
Source: DCA

2.13.7.3 Alternative no.3 – S32B Request

The alternative as presented in the S32B request related to the construction of 823 no. dwellings, open space, community/retail floorspace and 2 no. creches on an overall site area of 24.77 hectares.

The proposed layout was amended to take account of the feedback received at the S247 meeting including *inter alia*:

- Provision of C-Ring Road between Flemington Lane and the Clonard Road (R122).
- Retention of existing hedgerows facilitates ecological corridors and green pedestrian links through the development. Larger areas of Open Space have been formed along these routes as pocket parks to facilitate the provision of play equipment while maintaining the required 25m buffer from adjacent residential units.
- An access road with segregated pedestrian & cycle paths defines the boundary to the Class 1 Open Space to the west and provides a dedicated north/ south link through the development.
- Strong building frontage provided at junction between C-Ring and Boulevard through the use of 3-4 storey buildings.
- Duplex units fronting onto the central area of Open Space to the east of the C-Ring have been omitted in favour of traditional housing.
- Additional area of Open Space provided at southern end of development.

Figure 2.35: Alternative no. 3 S32B Meeting

RECEIVED: 18/12/2025

2.13.8 PROPOSED PREFERRED ALTERNATIVE (NO. 4) LRD APPLICATION- MAIN REASONS FOR THE OPTION CHOSEN, INCLUDING A COMPARISON OF THE ENVIRONMENTAL EFFECTS

The final layout proposed is not considered to give rise to any significant adverse environmental impacts. Mitigation measures to be implemented at construction and operational phases of the project are summarised in Chapter 17 (Summary of Mitigation and Monitoring Measures).

2.13.8.1 Population and Human Health

The alternatives examined would result in similar effects as the design is set within the parameters of the zoning for the subject lands. Through improvements to the mix of uses and providing community and retail development in tandem with development of residential uses, the preferred alternative would be a positive effect at a local context and the effect would be permanent.

2.13.8.2 Biodiversity

With reference to Biodiversity the implementation of the preferred alternative would be the proposed development will not result in the loss of habitats or species of high ecological significance and will not have any significant effects on the ecology of the wider area. Similar effects would arise from the other alternatives examined. The preferred alternative includes additional SUDs and native planting which will improve the biodiversity of the project site compared to the other alternatives. It will also retain more hedgerows compared to the extant permission (alternative no.1).

2.13.8.3 Land and Soils

Development of the land would require site clearance and excavations to facilitate the construction of the buildings and services. The effect would be not significant and negative due to the loss of underlying soils. However, this is consistent with achieving compact growth. The effect is locally negative, with a significance rating of imperceptible to not significant and of permanent duration. Similar effects would arise from the other alternatives examined. This is similar for the second and final alternative layout, which is positive compared to alternative no. 1.

2.13.8.4 Water/Hydrology

The implementation of the preferred alternative would require sustainable urban drainage (SuDS) measures in line with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS). The preferred alternative includes additional surface water SUDs measures which is long term positive, slight.

The significance of the identified impacts will be reduced to a “*Not significant*” residual impact on the identified hydrological/ hydrogeological receptors. Similar effects would arise from the other alternatives examined.

2.13.8.5 Air Quality and Climate

The construction phase of the development would result in slight, local negative effects on the air quality for the preferred alternative. With reference to the operational phase the preferred alternative would result in a not significant, local, negative, long-term effects. Similar effects would arise from the other alternatives examined for both the construction and operation phases.

2.13.8.6 Noise and Vibration

The impact of the construction phase will result in an increase in daytime noise levels at the closest receptors to the site and slight, local negative effects. The operational phase of the development will not adversely impact the existing noise climate at local receptors. The effects are similar across all the alternatives examined.

2.13.8.7 Landscape and Visual

Any proposed viable development will give rise to impacts of a similar nature. While the intensification of land use, as it changes from now agricultural into a residential development is a change that cannot be mitigated, the proposals reflect best practice in residential area layout, reflect the concepts in the wider zoned lands and will consolidate the urban area here with an overall beneficial effect locally and to the wider surrounding area.

2.13.8.8 Material Assets

All of the alternatives would place additional demand on existing infrastructure including drainage and water supply. Irish Water have confirmed the feasibility of the proposed development, and the effect is neutral, imperceptible, and permanent. The alternative for the LRD project introduces a full link between the Clonard Road and Flemington Lane which is positive, moderate and permanent.

2.13.8.9 Cultural Heritage

Ground disturbances associated with the construction of the proposed development have the potential to have a direct negative impact on the unrecorded sites. All alternatives examined would be similar in terms of impacts.

2.13.8.10 Risk Management

All alternatives relate to the construction of a residential development and therefore the comparison of alternatives is similar.

With reference to the final layout, the iterative process outlined above, which included alternative site layouts were considered with the objective of producing a new high quality residential development, which has undergone a robust consideration of relevant alternatives having regard to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

2.13.8.11 Summary

With reference to the final layout, the iterative process outlined above, which included alternative site layouts were considered with the objective of producing a new high quality residential development, which has undergone a robust consideration of relevant alternatives having regard to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

The proposed development provides for new residential development on lands zoned for residential use under the Fingal County Development Plan which was subject to the SEA process. As such, consideration of alternative sites for the construction of houses and apartments proposed in this residential development was not considered necessary.

Based on a comparison of the environmental effects, as described for each iteration above, together with the regulatory requirements of the Development Plan, it is considered the proposed development has been selected for the following reasons:

- The alternative for the LRD project introduces a full link between the Clonard Road and Flemington Lane which is positive, moderate and permanent.
- The proposed development results in a high degree of permeability, resulting in a highly connected neighbourhood with strong connections which will have positive impacts on population and human health.

- Avoids significant environmental impacts on the receiving environment.

In summary, the overall design of the proposed development considers all environmental effects and provides for a sustainable development that has been optimised to emphasise positive environmental effects whilst reducing negative environmental impacts wherever possible. The preferred alternative is not considered to give rise to any significant adverse environmental impacts following the mitigation measures to be implemented at the construction and operational phases. The final proposed scheme also responds to the characteristics and constraints of the subject site vis a vis the previous iterations of the scheme and the alternative layouts considered.

3.0 POPULATION & HUMAN HEALTH

3.1 INTRODUCTION

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has replaced 'Human Beings' with 'Population and Human Health'. This chapter also meets the requirement for assessment of 'Human Beings' as per Schedule 6 of the Planning and Development Regulations 2001 (as amended).

This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates who has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has 23 years of experience of Environmental Impact Assessment and urban development.

In preparing this chapter, consideration has been given to the other inputs to this EIAR including, in particular, the chapters addressing Air Quality and Climate, Noise and Vibration, Traffic as well as Risk Assessment Chapter (accidents or disasters) and the separate reports addressing Resource Waste Management, and the Construction and Environmental Management Plan (see Volume III of the EIAR).

Population and Human Health comprise an important aspect of the environment to be considered. Any significant impact on the status of human health, which may be potentially caused by a development proposal, must therefore be comprehensively addressed.

Population and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or 'populations'. While most developments by people will affect other people, this EIAR document concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions.

3.2 STUDY METHODOLOGY

At the time of writing there is no specific guidance from the EU Commission on the 2014 EIA Directive to indicate how the term 'Human Health' should be addressed. However, the European Commission's *Guidance on the preparation of the Environmental Impact Assessment Report* (2017) does reference the requirement to describe and, where appropriate, quantify the primary and secondary effects on human health and welfare. Moreover, the European Commission guidance states the following in relation to the assessment of Human Health:

"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of 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 pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."

EU Commission's SEA Implementation Guidance from 2003, as it gives an indication of how 'human health' should be considered in terms of environmental assessment and notes:

"The notion of human health should be considered in the context of the other issues mentioned [in the list of factors to be identified, described and assessed] and thus environmentally related health issues such as exposure to traffic noise or air pollutants are obvious aspects to study." (para 5.26).

In accordance with this approach to Human Health espoused in the Commission Guidance, this chapter addresses human health in the context of other factors addressed elsewhere in further detail within the EIAR where relevant. Relevant factors identified include inter alia water, air quality, noise, and the risk of major accidents and disasters.

In addition, this chapter of the EIAR has been prepared with reference to recent national publications which provide guidance on the 2014 EIA Directive including the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) and the Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in May 2022.

A site visit was undertaken to appraise the location and likely and significant potential impact upon human receptors. Published reference documents such as Central Statistics Office Census data, the National Planning Framework 2040 (as updated 2025), the Regional Spatial and Economic Strategy, the Fingal County Council Development Plan 2023-2029 were also examined.

The 2022 EPA Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA states that *“In an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc...”*

This chapter of the EIAR document focuses primarily on the potential likely and significant impact on Population, which includes Human Beings as required under the Schedule 6 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (as amended), and Human Health in relation to health effects/issues and environmental hazards arising from the other environmental factors. Where there are identified, associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. The reader is directed to the relevant environmental chapter of this EIAR document for a more detailed assessment.

This chapter has been prepared having regard to the following guidelines;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022);

The impact assessment section of this chapter follows the terminology (where applicable) used in the EPA Guidelines as set out in Chapter 1 of this EIAR.

3.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

3.3.1 INTRODUCTION

A description of the relevant aspects of the current state of the environment (baseline scenario) in relation to population and human health is provided below. Specific environmental chapters in this EIAR provide a baseline scenario relevant to the environmental topic being discussed. Therefore, the baseline scenario for separate environmental topics is not duplicated in this section; however, in line with guidance provided by the EPA and the Department, the assessment of impacts on population and human health refers to those environmental topics under which human health effects might occur, e.g. noise, water, air quality etc.

An outline of the likely evolution without implementation of the project as regards natural changes from the baseline scenario is also provided.

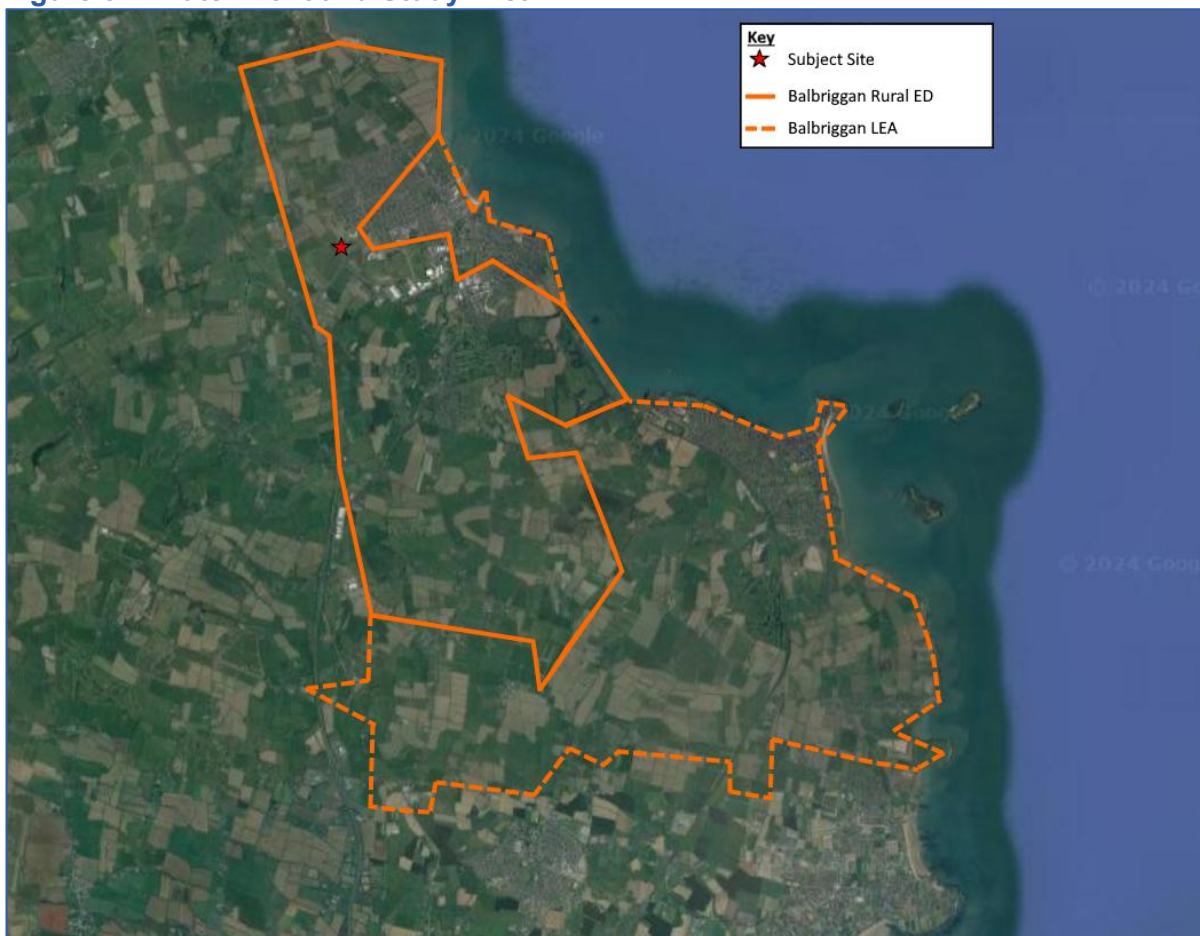
The existing environment is considered in this section under the following headings:

- Economic Activity;
- Social Patterns;
- Land-Use and Settlement Patterns;
- Employment; and
- Health & Safety.

The subject site consists of three main parcels of land located to the east of Bóthar Chluain Ioraird and to the west of Taylor Hill Boulevard, adjacent to the western environs of the built envelope of Balbriggan town. The proposed development will form an extension and next phase of development (Phase 4 Folkstown) as the next phase for the lands at Ladywell in Balbriggan.

The subject lands comprise an undeveloped, greenfield site of c 24.91 hectares and is situated to the north of Clonard Road (R122) between Bóthar Chluain Ioraird to the west and Taylor Hill Boulevard to the east. The lands are located approximately 700m from the Millfield Shopping Centre, c. 820m from the Castle Mill Shopping Centre and c. 1.7km from Balbriggan Town Centre including Balbriggan train station. There is a minor vehicle access point to the site from Taylor Hill boulevard however future appropriate access is dependent on the roads infrastructure development and upgrades proposed and permitted under the subject application and previous phases of the overall development respectively.

Figure 3.1: Catchment and Study Area



Source: Google Maps

The subject site is located within the boundaries of the Electoral division (ED) of Balbriggan Rural as defined by the Central Statics Office. This Electoral Division comprises the immediate catchment area of the subject site, to include some more urban estates to the west and north and a substantial, predominantly-rural area to the south.

The ED's comprising the wider study area of the Balbriggan Local Electoral Area (LEA) include the Balbriggan Urban, Skerries and Holmpatrick EDs. Figure 3.1 indicates the geographical extent of the immediate catchment and the wider study area.

3.3.2 EMPLOYMENT & ECONOMIC ACTIVITY

The CSO's Labour Force Survey for Q3 2025⁹, published on the 20th of November 2025 states that the number of persons aged 15-89 years in employment increased by 30,600 or 1.1% to 2,825,500 people in the 12 months to Q3 2025. The unemployment rate for people aged 15-64 years in Q3 2025 was 5.3%, up 0.8 percentage points from 4.5% in Q3 2024. This is the highest rate recorded since Q3 2021.

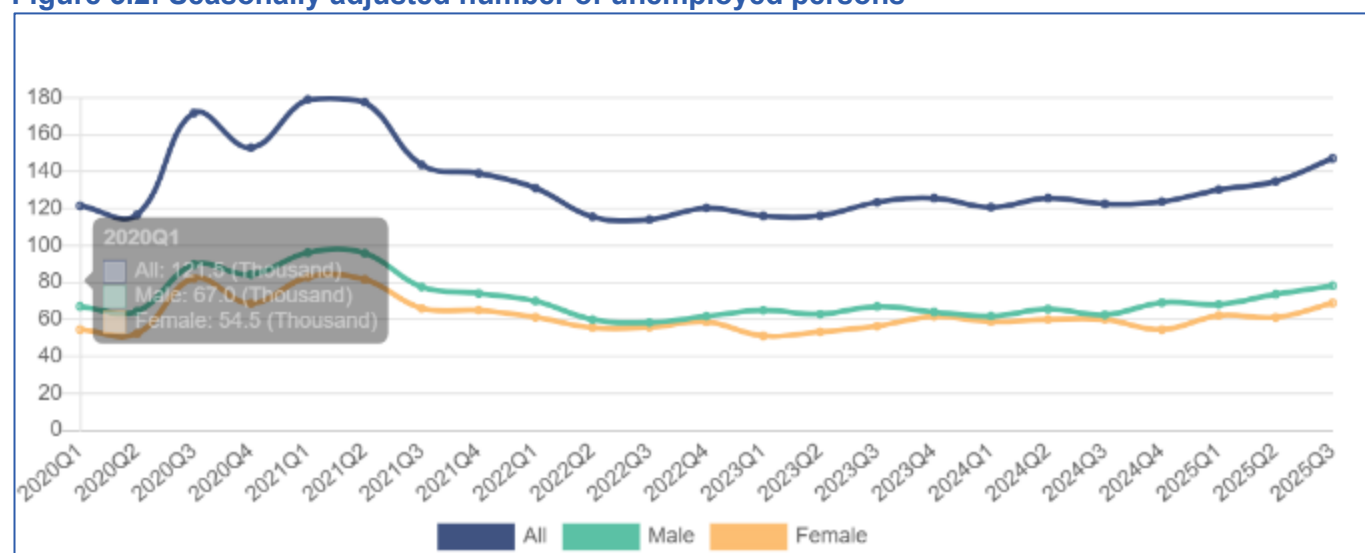
In the 12 months to Q3 2025 the age group with the highest employment rate was the 35-44 years age group (84.9%), which was down 0.7 percentage points from the 85.6% recorded a year previously. The lowest employment rate by age was observed in the 15-19 year old cohort at 28.7%.

The largest increase in employment by economic sector was in Transportation & Storage, which rose by 18,800 people (+15.9%). The largest decrease in employment was in Public Administration & Defence, down by 10,300 people (-6.7%)

Using standard International Labour Organisation (ILO) criteria, an estimated 2,825,500 persons were in employment in Q3 2025, up 1.1% (30,600) from 2,794,800 in Q3 202. The increase of 30,600 (+1.1%) in employment is composed of increases of 17,200 (+1.2%) for males and 13,400 (+1.0%) for females in the year to Q3 2025.

The estimated Labour Force (the sum of all people aged 15-89 years who were either employed or unemployed) stood at 2,980,900 in Q3 2025, up 1.9% (+56,500) from Q3 2024.

Figure 3.2: Seasonally adjusted number of unemployed persons



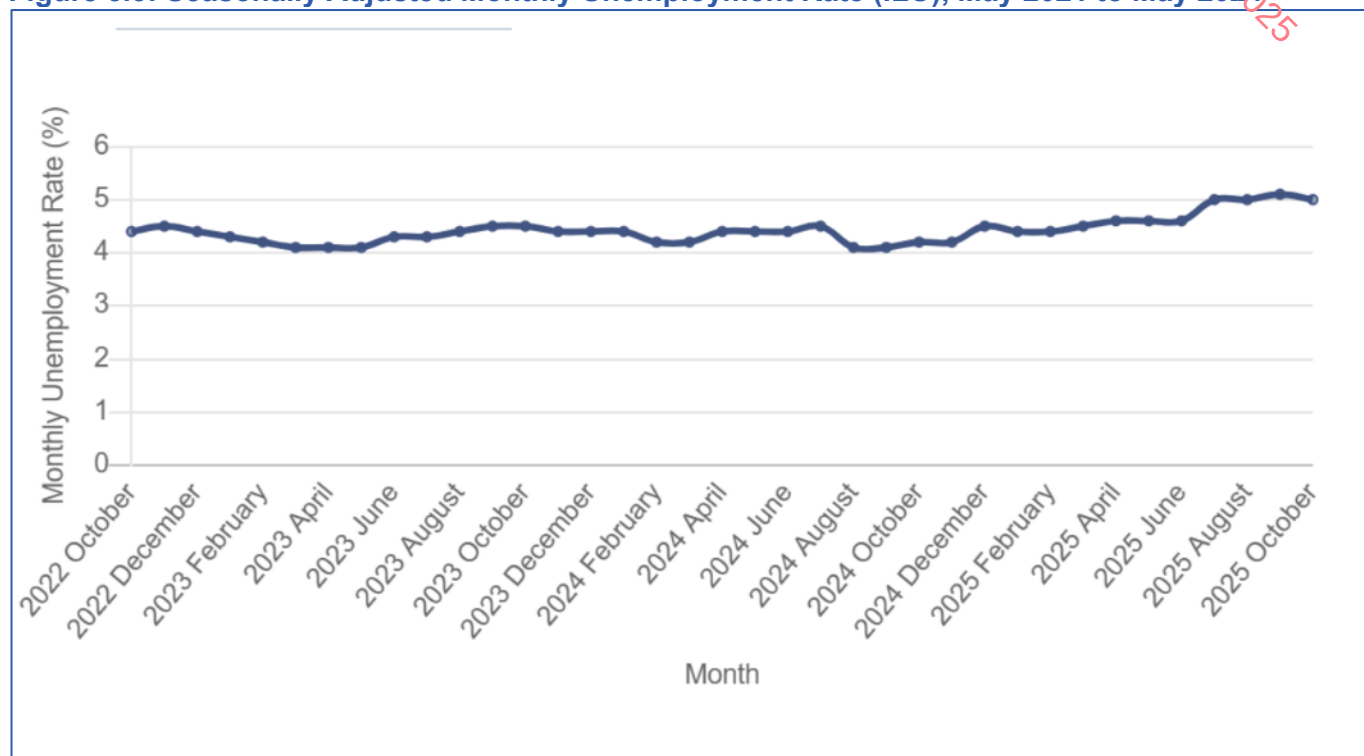
Source: CSO (aged 15-74 years by sex, Quarter 1 2020 to Quarter 3 2025 (thousands))

⁹ <https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter32025/>

The CSO Monthly release (5th November 2025) notes that In October 2025, the seasonally adjusted unemployment rate was 5.0%, down from the revised rate of 5.1% in September 2025. On an annual basis, the unemployment rate increased from 4.2% in October 2024 to 5.0% in October 2025.

The monthly unemployment rate for people aged 25-74 years was 3.8%, down from the revised rate of 3.9% in September 2025.

Figure 3.3: Seasonally Adjusted Monthly Unemployment Rate (ILO), May 2021 to May 2024



The monthly unemployment rate in October 2025 was 5.0% for females, unchanged from the revised rate in September 2025, and up from 4.0% in October 2024. The monthly unemployment rate for people aged 25-74 years was 3.8%, down from the revised rate of 3.9% in September 2025.

The Economic Social Research Institute (ESRI) quarterly economic commentary for Autumn 2025 notes that 'The economy continues to perform robustly. The most recent data show strong growth in consumption expenditure (+3% in Q2), in employment (+2.3% in Q2) and in tax receipts (+4.4% to end August). We expect this positive situation to continue over the forecast horizon and see modified domestic demand (MDD) growing by 3.8% in 2025 and by 3.2% in 2026.

Economic Social Research Institute (ESRI) quarterly economic commentary states that in Q2 2025, there was a welcome rise in housing output to 9,200 completions in the quarter, bringing completions for the first half of the year to over 15,000. For 2025, we have revised our forecast for housing completions up to over 35,000 but our forecast for 2026 is reduced to just under 36,000, based in part on a notable slowdown in commencements this year following the policy-related spike in 2024.

The Commentary highlights inflation remains relatively low and this will contribute to both real wage growth and consumption growth in the months ahead. However, we discuss the notable increase in grocery inflation and differential impacts across the income distribution.

The Central Bank of Ireland Quarterly Bulletin Q3 2025 released in September 2025 stats that "The domestic economy overall continues to be resilient so far in 2025, with revised National Accounts data from the CSO re-confirming our view from the March Bulletin on the momentum in the economy through

the first half of the year. Employment growth continues to exceed 2 per cent and unemployment remains relatively low. Domestic inflationary pressures remain contained, although food price inflation has been relatively high lately due mainly to tighter supply conditions in European beef markets (Box A). Continued expected growth in real disposable incomes over the forecast horizon, amid a stable labour market, supports the expected continued growth in consumer spending.”

As such, the above sources demonstrate that the national economy will continue to perform well. This, in turn, results in increased levels of economic activity, increases in investment and employment therefore, results in a demand for increased housing provision to accommodate a growing workforce and population.

3.3.3 SOCIAL PATTERNS

For the purposes of this EIAR, a review has been carried out of data from the 2011, 2016 and the 2022 Census of Population in order to identify any significant changes in population levels and age profile at national, regional, county, city and local levels. The 2022 Census results provide for an overview of the current population, employment and economic statistics and trends of the State.

A review was also carried out of the census data relating to social class and household size at each of these levels. The following section provides a summary description of the existing environment in terms of each of these indicators.

3.3.3.1 Population

The census data illustrates that the population of the Irish State was 5,149,139 persons in 2022. This is the first time that a census has recorded a population of over five million people in over 170 years. The population of the Greater Dublin Area increased by 278,449 persons, or 15.4% since 2011. The population of Dublin County increased by 14.5% between 2011 and 2022 to now comprise 1,458,154 persons or an increase of some 185,085. The population of Fingal is now 330,506 persons, an increase of 20.6% compared to 2011.

Table 3.2 below shows the population of the State, the Greater Dublin Area, Dublin County and City, Fingal, the wider study area of Balbriggan LEA and the Balbriggan Rural electoral division area for 2006, 2011 and 2016. (It should be noted that that the Greater Dublin Area (GDA) includes Dublin County as well as Wicklow, Kildare and Meath. Dublin County includes Fingal, South Dublin, Dún-Laoghaire Rathdown and Dublin City).

Table 3.1: Population at State, Regional, County and Local Level, 2011- 2022

Area	2011	2016	2022	Change 11 - 22	% change
State	4,588,252	4,757,976	5,149,139	560,887	12.2%
Greater Dublin Area	1,804,156	1,904,806	2,082,605	278,449	15.4%
Dublin County	1,273,069	1,345,402	1,458,154	185,085	14.5%
Dublin City	527,612	553,165	592,713	65,101	12.3%
Fingal	273,991	296,020	330,506	56,515	20.6%
Balbriggan LEA	34,252	36,570	40,476	6,224	18.2%
Balbriggan Rural ED	15,140	16,495	19,347	4,207	27.8%

Source: Census of Population 2011, 2016 and 2022

Table 3.2 indicates that the population of the state grew from approximately 4.5 million to 5.1 million between 2011 and 2022, representing an increase of 12.2% in 11 years. The population of Dublin County increased by 14.5% (185,085 persons) over the same period while Dublin City grew by 12.3% (65,101 persons) between 2011 and 2022. The population of Fingal County grew faster than the city with a growth rate of 20.6%. The lower population growth rate experienced in Dublin City compared to the increase experienced in Fingal County may reflect the restricted availability of development land within the area.

There is an abundance of available land in Fingal and if its potential is realised, the county would be more than able to accommodate the significant quantities of housing needed to facilitate such a growing population. The subject lands at Folkstown, Balbriggan would see such potential realised through the proposed development.

Population growth within the wider study area of Balbriggan LEA also rose rapidly from 2011 to 2022 by 18.2%, while the Balbriggan Rural electoral division followed suit with major increases in its population of 27.8% since 2011 to 2022. This trend of significant growth in the surrounding area of Balbriggan brings with it a proportional increase in demand for housing and associated services provision in the area to accommodate present and future population growth in the area. The proposed development at Phase 4, Folkstown would help alleviate such demand pressures while also providing much needed social and affordable housing options for a range of family and individual demographics.

3.3.3.2 Age Profile

Table 3.3 shows the population of the State, the Greater Dublin Area, Dublin County and City, Fingal, the wider study area of Balbriggan LEA and the Balbriggan Rural ED level for 2011, 2016 and 2022.

Table 3.2: Age Profile at State, County and Local Level, 2006-2011-2016

Area	0-14	15-24	25-44	45-64	65+
State 2011	21.3%	12.6%	31.6%	22.7%	11.7%
State 2016	21.1%	12.1%	29.5%	23.8%	13.4%
State 2022	19.7%	12.5%	27.6%	25.1%	15.1%
GDA 2011	20.8%	13.1%	34.2%	21.5%	10.4%
GDA 2016	20.7%	12.4%	32.5%	22.5%	11.9%
GDA 2022	19.4%	12.8%	30.5%	24%	13.3%
Dublin County 2011	19.3%	13.6%	34.9%	21.3%	10.9%
Dublin County 2016	19.3%	12.7%	33.8%	22.0%	12.2%
Dublin County 2022	18.4%	12.9%	32.0%	23.2%	13.4%
Dublin City 2011	15.2%	14.5%	37.2%	20.5%	12.6%
Dublin City 2016	15.0%	13.2%	37.4%	21.3%	13.0%
Dublin City 2022	14.9%	12.9%	36.5%	22.3%	13.4%
Fingal 2011	24.2%	24.2%	24.2%	24.2%	24.2%
Fingal 2016	20.4%	20.4%	20.4%	20.4%	20.4%
Fingal 2022	22.4%	22.4%	22.4%	22.4%	22.4%
Balbriggan LEA 2011	27.9%	11.0%	34.9%	19.3%	6.9%
Balbriggan LEA 2016	27.6%	11.3%	31.3%	21.3%	8.5%
Balbriggan LEA 2022	23.8%	13.7%	26.7%	25.0%	10.8%
Balbriggan Rural ED 2011	32.8%	32.8%	32.8%	32.8%	32.8%
Balbriggan Rural ED 2016	32.7%	32.7%	32.7%	32.7%	32.7%
Balbriggan Rural ED 2022	22.4%	22.4%	22.4%	22.4%	22.4%

Source: Census of Population 2011, 2016 and 2022

The table indicates that the highest percentage of population in the study area relates to the working age group (25-44). It is considered that the available working population in the immediate vicinity of the proposed development will enhance the attractiveness of investors to locate in this area to benefit from the significant available work force. In addition, the following statistics further indicate the appropriateness of the proposed office development in relation to the highly skilled and educated work force in the surrounding area.

3.3.3.3 Social Class

The Census of Population determines social class by the nature of employment and is therefore useful as a guide to the principal types of occupation in which the population is employed or in which the population is capable of being employed. Table 3.4 overleaf shows the number and percentage of people in each of the 11 socio-economic groups identified in the 2022 Census of Population.

Table 3.3: Persons by Socio-Economic Group, 2022

Socio-Economic Group	State	Dublin County	Fingal	Balbriggan LEA	Balbriggan Rural ED
A Employers and managers	719,767 (14.3%)	235,275 (16.6%)	58,905 (18.1%)	6,234 (15.4%)	2,386 (12.3%)
B Higher professional	80,177 (1.6%)	27,495 (1.9%)	5,005 (1.5%)	471 (1.2%)	98 (0.5%)
C Lower professional	340,752 (6.8%)	122,457 (8.7%)	24,024 (7.4%)	2,375 (5.9%)	826 (4.3%)
D Non-manual	1,737,255 (34.4%)	532,580 (37.6%)	126,403 (38.8%)	15,852 (39.2%)	7,588 (39.3%)
E Manual skilled	459,800 (9.1%)	96,979 (6.9%)	24,679 (7.6%)	3,472 (8.6%)	1,743 (9.0%)
F Semi-skilled	399,627 (7.9%)	87,628 (6.2%)	21,281 (6.5%)	3,495 (8.6%)	2,004 (10.4%)
G Unskilled	156,548 (3.1%)	39,113 (2.8%)	8,016 (2.5%)	1,187 (2.9%)	657 (3.4%)
H Own account workers	214,046 (4.2%)	51,867 (3.7%)	14,272 (4.4%)	1,565 (3.9%)	775 (4.0%)
I Farmers	158,622 (3.1%)	1,880 (0.1%)	1,324 (0.4%)	188 (0.5%)	69 (0.4%)
J Agricultural workers	58,565 (1.2%)	2,845 (0.2%)	1,371 (0.4%)	275 (0.7%)	104 (0.5%)
Z All others gainfully occupied and unknown	721,522 (14.3%)	216,923 (15.3%)	40,362 (12.4%)	5,353 (13.2%)	3,071 (15.9%)
Totals	5,046,681	1,415,042	325,642	40,467	19,321

Source: Census of Population 2022

Table 3.4 indicates that the wider study area of Balbriggan LEA is predominantly in tune with the norms of Fingal, County Dublin, and the State, the electoral division of Balbriggan Rural shows some divergent results in relation to more professional occupations and skill-levels. The Balbriggan Rural ED indicates a lower percentage of people in higher skilled and professional socio-economic groups such as '*Employers and managers*', '*higher professionals*' and '*lower professionals*', while the ED also sees higher percentages of people in unskilled or partially skilled professions.

3.3.3.4 Educational Attainment

Advancing from second level education to third level assists the ability of the population to gain access to employment and enter the labour market for higher earnings. Table 3.5 overleaf contains CSO data from 2022 relating to the educational attainment of people at national, regional, county, city and local level.

Table 3.4: Persons by Educational Attainment, 2016

Education	State	Dublin County	Fingal	Balbriggan LEA	Balbriggan Rural ED
No Formal Education	81,280 (2.4%)	18,836 (2%)	3,368 (1.7%)	517 (2.2%)	222 (2.2%)
Primary Education	251,219 (7.4%)	61,625 (6.5%)	9,576 (4.7%)	1,299 (5.4%)	445 (4.4%)
Lower Secondary	446,007 (13.2%)	99,180 (10.4%)	20,784 (10.3%)	2,847 (11.9%)	1,227 (12.2%)
Upper Secondary	613,478 (18.1%)	154,071 (16.1%)	38,007 (18.8%)	4,873 (20.4%)	2,112 (20.9%)
Technical or Vocational qualification	253,892 (7.5%)	61,361 (6.4%)	15,339 (7.6%)	2,013 (8.4%)	1,045 (10.4%)
Advanced Cert. / Completed Apprenticeship	190,268 (5.6%)	40,157 (4.2%)	10,678 (5.3%)	1,430 (6.0%)	626 (6.2%)
Higher Certificate	187,488 (5.5%)	46,609 (4.9%)	11,823 (5.8%)	1,458 (6.1%)	680 (6.7%)
Ordinary Bachelor Degree or National Diploma	272,535 (8.1%)	78,494 (8.2%)	18,726 (9.2%)	2,194 (9.2%)	922 (9.1%)
Honours Bachelor Degree, and/or Professional Qualification	450,523 (13.3%)	149,733 (15.7%)	30,919 (15.3%)	3,177 (13.3%)	1,165 (11.6%)
Postgraduate Diploma or Degree	379,416 (11.2%)	148,720 (15.6%)	27,228 (13.4%)	2,652 (11.1%)	938 (9.3%)
Doctorate (Ph.D.) or higher	38,212 (1.1%)	15,866 (1.7%)	2,497 (1.2%)	242 (1.0%)	48 (0.5%)
Not Stated	220,311 (6.5%)	79,921 (8.4%)	13,685 (6.8%)	1,211 (5.1%)	655 (6.5%)
Totals	3,384,629	954,573	202,630	23,913	10,085

Source: Census of Population 2022

The table indicates that 11.6% of people living in the Balbriggan Rural ED have studied up to Honours Bachelor Degree / Professional Qualification level. A further 9.3% have studied to Postgraduate Diploma or Degree level, which is lower than the national averages of 13.3% and 11.2% respectively.

Predominantly, as the data in Table 3.5 illustrates, the majority of the population in the Balbriggan Rural ED chose to leave their education reasonably early with 12.2% leaving their education at lower secondary school level and a further 20.9% only attaining their education to leaving certificate level. The completion rates at lower levels of education therefore remain average to high than averages across other study areas. The incidence of 'No Formal Education' amongst the population of the Balbriggan Rural ED (2.2%) is also average when compared to that of the state, Dublin County, Fingal and wider study area of Balbriggan LEA.

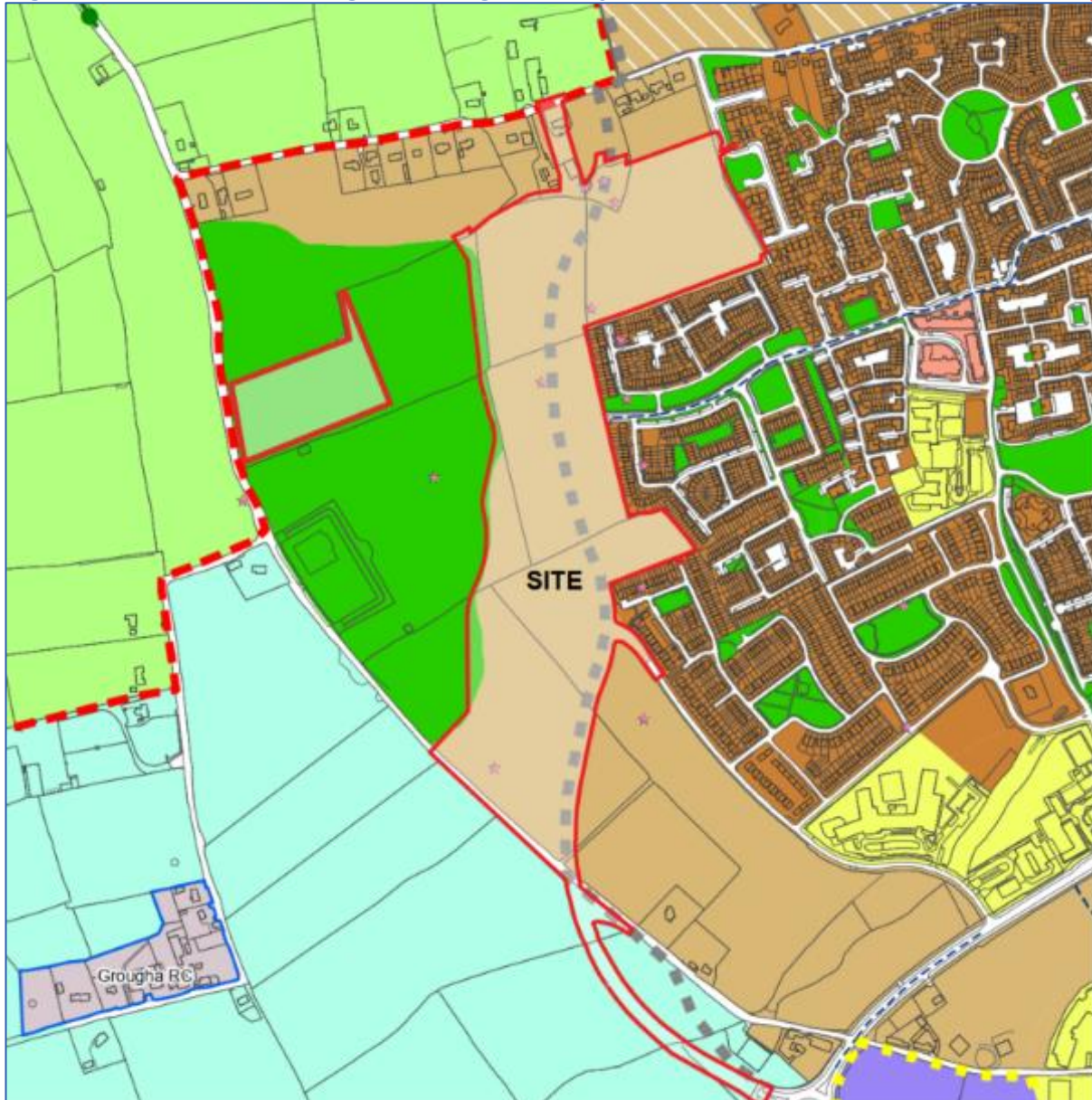
Overall, Table 3.5 indicates that when compared to other areas the resident population of the wider study area and the Balbriggan Rural ED is characterised by considerably average levels of educational attainment. This is consistent with the indicative data in Table 3.4 showing the concentration of unskilled workers in the area.

3.3.4 LAND USE & SETTLEMENT PATTERNS

The subject site consists of three separate land parcels located on a substantial greenfield site and extend to c. 24.91 ha. The predominant land use immediately surrounding the subject site are undeveloped greenfield lands to the north, west and south, with some designated for significant residential development as proposed and permitted. To the east, a mix of residential developments, specifically at Taylor Hill,

educational facilities in the form of Coláiste Ghlór na Mara, Scoil Chormaic CNS and Bremore Educate Together Secondary School, and considerable commercial and industrial development further south and south-east at Millfield Shopping Centre and Stephenstown Industrial Estate. The land use pattern of much of the wider study area is also consistently characterised by such land-uses. The site is within a 20-minute walking distance of Balbriggan town centre and its associated retail, commercial and cultural uses.

Figure 3.4: Land Use Zoning Map (Fingal County Development Plan 2023-2029)



Source: Extract from Fingal County Development Plan 2023-2029

The site is located within the administrative area of Fingal County Council and is therefore subject to the land use policies and objectives of the Fingal County Development Plan 2023-2029. The lands are zoned objective 'RA – Residential Area' which seeks to *"provide for new residential communities subject to the provision of the necessary social and physical infrastructure"*.

The following land uses are permissible in RA zoned areas:

*"Bed and Breakfast, **Childcare Facilities, Community Facility**, Education, Funeral Home/Mortuary, Guest House, Health Centre, Health Practitioner, Hospital, Office Ancillary to Permitted Use, Office ≤ 100*

*sqm, Office > 100 sqm and < 1,000 sqm, Open Space, Place of Worship, Public House, Public Transport Station, Recreational/Sports Facility, **Residential**, Residential Care Home/ Retirement Home, Restaurant/Café, **Retail – Local < 150 sqm nfa**, Retail – Convenience ≤ 500 sqm nfa, Retail – Comparison ≤ 500 sqm nfa, Retail – Supermarket ≤ 2,500 sqm nfa, Retirement Village, Sheltered Accommodation, Sustainable Energy Installation, Taxi Office, Traveller Community Accommodation, Utility Installations, Veterinary Clinic.” (JSA emphasis)*

Residential, open space and convenience retail (< 500sqm net floor area) uses are noted as being permitted in principle in RA zonings.

The Planning Report and Statement of Consistency, prepared by John Spain Associates, which accompanies this application addresses the planning context issues in more detail.

3.3.5 HOUSING

The Government introduced a new housing plan on the 13th of November 2025 called “*Delivering Homes, Building Communities*”, which aims to speed up the delivery of new homes and tackle homelessness. The is a wide-ranging strategy that encompasses two pillars: Activating Supply and Supporting People.

Pillar 1 focuses on activating the supply of 300,000 homes over the lifetime of the plan. In order to achieve these targets the Government will:

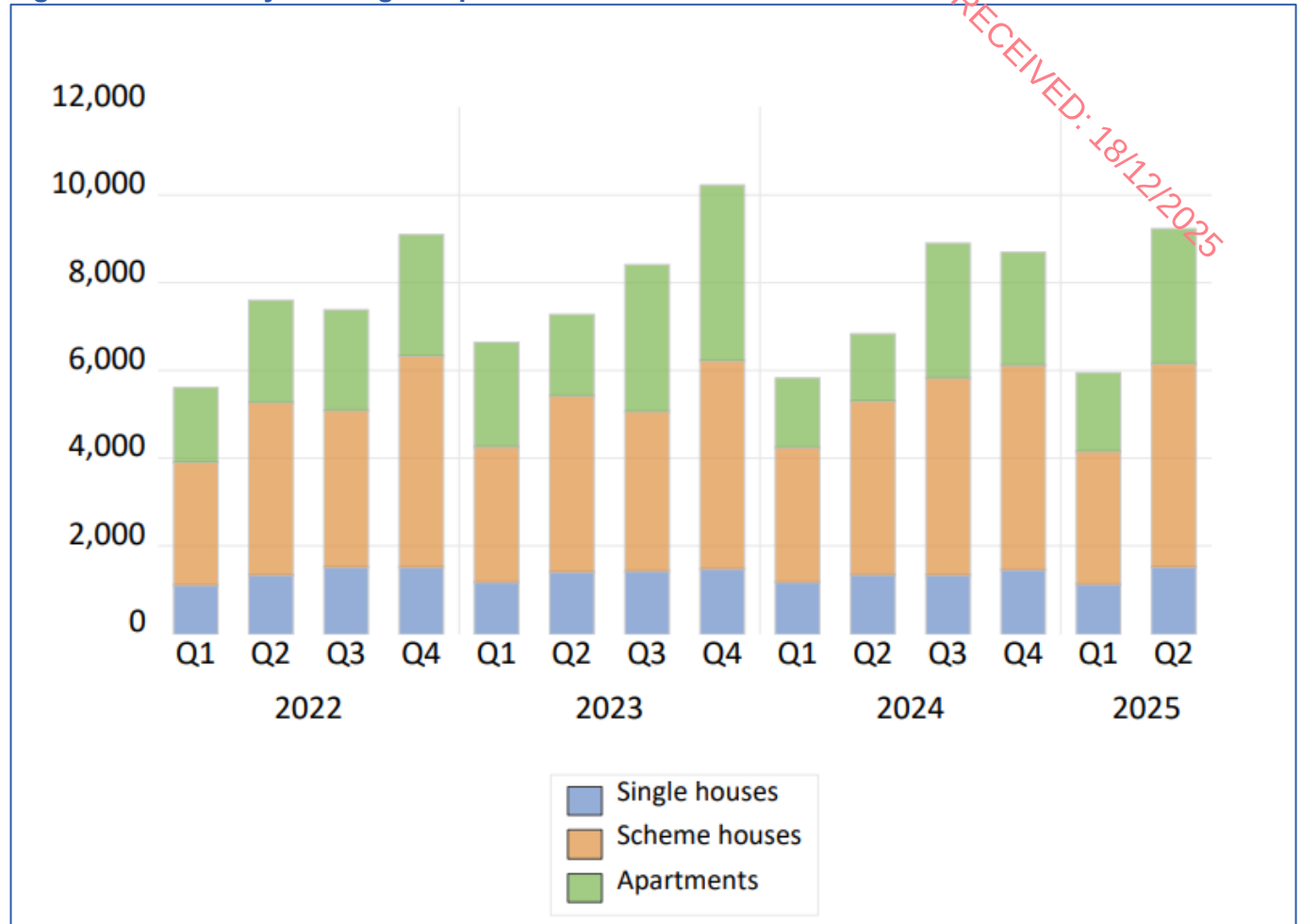
- Ensure that a strong pipeline of zoned and serviced land is available;
- Create conditions to attract required investment;
- Increase skills and support the adoption of Modern Methods of Construction in the residential construction sector; and,
- Work toward ending dereliction and vacancy.

Pillar 2 will ensure that Government supports the necessary stakeholders by:

- Focus on ending homelessness, deliver homes for older people and support social inclusion;
- Deliver an average of 12,000 new social homes every year over the lifetime of the Plan;
- Promote affordable homeownership, protect renters and make buying and renting homes more affordable; and,
- Invest in the built environment of towns, villages and cities across the country to enhance community well-being.

There is a significant and established housing need in Dublin and the State as a whole, as recognised within Government housing and planning policy. The government’s vision for the housing system over the longer term is to achieve a steady supply of housing in the right locations with economic, social and environmental sustainability built into the system. The proposed development will allow for a new residential community, built to a high standard and quality, adjacent to existing settlements, with a range of amenities and services provided, in close proximity to public transport services.

The ESRI note in the Q3 Summary that “dwelling investment has continued to underperform relative to both expectations and the underlying housing need of the Irish population, which is estimated to be in the range of between 50,000 and 60,000 units per annum.”

Figure 3.5: Quarterly housing completions for the State

Source: Figure 8 ESRI Autumn Commentary 2025.

In the second quarter of 2025, a notable and welcome increase in housing output was evident. Housing completions for the quarter, Figure 8, increased to just over 9,200 units with increases in both scheme housing as well as apartment completions. For the first half of 2025, this brings the total number of completions to over 15,000. On average for the years 2019 through 2024 (excluding 2020 due to COVID-19), the first half of any calendar year has equated to just over 43% of total output. If this relativity was to be maintained for 2025, the total output for the year could exceed 35,000 units for the first time since the financial crisis; this represents an increase relative to our full year expectations in the previous Commentary.

In terms of increasing future housing delivery, the proposed development will facilitate the construction of 815 no. dwellings in a mixture of apartments and houses, 2 no. creches commercial/retail units, community floorspace and all associated site development works on lands that have been zoned for development.

In terms of increasing future housing delivery, the proposed development is located at a location which is zoned for significant residential development, and which is appropriate for the uses proposed.

The application site is strategically located in close proximity to public transport infrastructure including numerous existing Dublin Bus routes (i.e., 33, 33A, 101, 101X, 191 and B1) and proposed BusConnects routes, the Dublin-Belfast railway line through Balbriggan train station and by a good network of cycleways and pedestrian pathways throughout. There is a significant demand and need for additional housing provision not only in the State but in the area exclusively as recognized in the Fingal County Development Plan 2023-2029, as such it is considered that the provision of a significant residential development at this location will improve the housing shortage in the surrounding area.

The overall development at Ladywell/Folkstown will also provide for a much-enhanced public realm with new through routes and pedestrian and cyclist connections.

The site is located within the administrative area of Fingal County Council and is therefore subject to the land use policies and objectives of the County Development Plan 2023-2029. The site is zoned objective 'RA – Residential Area' which seeks to *"provide for new residential communities subject to the provision of the necessary social and physical infrastructure"*, under the Fingal County Development Plan 2023-2029.

The development of the lands has the potential to provide significant additional housing provision (815 no. units) to also include commercial retail unit (419 sq. m), 2 no. creche facilities, community floorspace (c. 730 sq. m) expansive areas of public open green space, car parking, bicycle parking and other ancillary services and amenities. It is considered that the proposed development will contribute to the national economy by enabling the activation of zoned lands for residential development in order to meet the market and social demand for high quality housing within the Dublin region in close proximity to public transport nodes as well as local services. It will also allow for the provision of much needed housing accommodation to cater for the increasing population of homeless and disadvantaged persons in the increasingly inaccessible housing market through social and affordable housing provision within the scheme. It will therefore assist in delivering the strategic long term sustainable development objectives of both Fingal County Council, Dublin City and the Greater Dublin Area.

There is clear support and a need for compact housing growth at well serviced urban locations through the creation of vibrant and mixed neighbourhoods and communities. The proposed development aims to achieve this through the development of housing with associated green spaces, retail, and new and improved pedestrian and cyclist infrastructure. The proposed development will therefore allow for the achievement of such on the subject lands through the delivery of 815 no. residential dwellings.

3.3.6 HEALTH & SAFETY

The adjoining context consists of undeveloped lands and a mix of residential, educational, open amenity spaces and commercial development. It does not include any significant man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

3.4 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 proposed environment that could arise. For this chapter the potential impact on Populations and Human Health is discussed.

A full description of the proposed development is provided in Section 2 of this EIAR document.

3.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

3.5.1 INTRODUCTION

This section provides a description of the specific, direct and indirect, impacts that the proposed development may have during both the construction and operational phases of the proposed development. As stated, guidance documents from the EPA and the Department outline that the assessment of impacts on population and human health should focus on health issues and environmental hazards arising from the other environmental factors and does not require a wider consideration of human health effects which do not relate to the factors identified in the EIA Directive. Additionally, this section addresses the socio-economic and employment impacts of the proposed development.

The specific chapters of the EIAR (4-16) assess the environmental topics outlined in the EIA Directive.

3.5.2 WATER

3.5.2.1 Construction Phase

Provision of water infrastructure for the proposed development would involve construction activities within the subject lands mainly involving trench excavations conducted in parallel with the other services. The potential impact on the local public water supply network would be short term and imperceptible. Therefore, the impact on human health and population in this regard is considered to be not significant.

During the course of the construction phase of the proposed development, there is potential, in the absence of mitigation, for surface water runoff to suffer from increased levels of silt or other pollutants, in addition to potential pollution from spillages, wheel washing and water from trucks on site. The Construction and Environmental Management Plan (contained in Appendix D of Volume III of the EIAR, and the Resource and Waste Management Plan (Appendix E, Volume III of the EIAR), set out how all materials will be managed, stored and disposed of in an appropriate manner, mitigating the potential negative effects as outlined.

Potential impact on water is addressed in Chapter 6 (Water and Hydrology) and a number of mitigation measures are outlined in that chapter of this Environmental Impact Assessment Report. These mitigation measures will serve to minimise potential adverse impacts of the construction phase to the water environment, thereby minimising any associated risk to human health from water contamination. Therefore, the impact of construction of the proposed development in relation to water is likely to be short-term and imperceptible with respect to human health.

3.5.2.2 Operational Phase

All new foul drainage lines will be constructed in accordance with Irish Water Standards. Foul sewers will be pressure tested and will be subject to a CCTV survey in order to identify any possible defects prior to being made operational. The design of proposed site levels (roads, parking bays, swales etc.) has been carried out in such a way as to replicate existing surface gradients where possible, therefore replicating existing overland flow paths, and not concentrating additional surface water flow in a particular location.

Surface water runoff from the site will be attenuated to the greenfield runoff rate as set out in the Paul McGrail Engineering Services Report, included in the LRD application with detail also contained in Chapter 2 and 13 of the EIAR.

SuDS features such as swales and filter drains to provide additional storage and promote infiltration of and treatment of surface water run-off have been provided in landscaped areas.

All new surface water drainage on site will be pressure tested and will have a CCTV survey carried out prior to being made operational. The site is attenuated to mimic the greenfield scenario as part of the overall Ladywell/Folkstown lands.

3.5.3 NOISE AND VIBRATION

3.5.3.1 Construction Phase

Noise and Vibration are addressed in Chapter 8 (Noise and Vibration) which was prepared by AWN Consulting.

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site, and construction traffic, which will all generate noise. The highest noise levels will be generated during the general construction activities and during rock excavation. The

construction noise levels will only occur during daytime hours which will serve to minimise the noise impacts at local existing receptors over the course of the construction phase.

Chapter 8 of this EIAR sets out mitigation measures in relation to noise.

Any construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Chapter 9. Following the implementation of mitigation and based on the standards which will be maintained, Chapter 9 predicts that vibration impacts during the construction stage will be negative, not significant, and temporary.

3.5.3.2 Operational Phase

Once operational, if building services plant items are required to serve the development, the cumulative operational noise level at the nearest noise sensitive location surrounding the development (e.g. residential dwellings etc.) will be designed/attenuated to meet the relevant BS 4142 noise criteria for day and night-time periods.

The residual construction noise impact will be negative, temporary to short-term and moderate to significant.

3.5.4 AIR QUALITY & CLIMATE

3.5.4.1 Construction Phase

During the construction phase, site clearance and ground excavation works have the potential to generate dust emissions rising from the operation and movement of machinery on site. This could have a potential impact on population and human health.

Various elements associated with the construction phase of the proposed development have the potential to impact local ambient air quality, human health and climate. However, the potential construction phase impacts shall be mitigated as detailed above to ensure there is no adverse impact on ambient air quality for the duration of all construction phase works. It is predicted that the construction phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or on local human health or on the local micro-climate or the wider macro-climate.

The predicted construction phase residual impacts on air quality will be negative, slight and short-term.

The predicted residual operational phase impacts on air quality and climate will be negative, imperceptible and long-term.

3.5.4.2 Operational Phase

The operational phase of the proposed development will result in a slight impact on local air quality primarily as a result of the increased traffic movements associated with the development.

It is predicted that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health, as stated in Chapter 7 and 8 – Air Quality and Climate.

3.5.5 LANDSCAPE & VISUAL IMPACT

3.5.5.1 Construction Phase

The construction phase will have short term landscape and visual impacts. The impacts are not considered significant on population and human health as outlined in chapter 10, prepared by Parkhoo.

3.5.5.2 Operational Phase

The operational phase will result in landscape and visual impacts, as set out in Volume II of this EIAR. The impacts are not considered significant on population and human health.

3.5.6 ECONOMIC ACTIVITY

3.5.6.1 Construction Phase

The construction phase of the proposed development is likely to result in a positive net improvement in economic activity in the area of the proposed development site, particularly in the construction sector and in associated and secondary building services industries. The sector has grown strongly in recent years and this development will help to further enhance growth and reduce the increasing pressure on the housing market into the future post-construction of the proposed development. This development will help to sustain and promote employment and short term slight positive impacts.

It is further noted that due to the scale and extent of the overall proposed development that it is likely that construction teams will carry on from phase to phase creating sustainable employment over the medium term 5-7 years.

The construction of the development and all associated infrastructure will precipitate a short term slight positive impact on construction-related employment for the duration of the construction phase. The phased construction of the proposed residential units, neighbourhood centre, childcare facility alongside associated physical infrastructure will result in a construction period of up to 48 months and will consequently enhance economic activity during this period, which is considered to be a slight temporary positive impact. A considerable amount of the work will be undertaken by sub-contractors who will also work elsewhere on a phased basis over the construction phase.

The construction phase will also have secondary and indirect 'spin-off' impacts on ancillary support services in the wider area of the site, such as retail services, together with wider benefits in the aggregate extraction (quarry) sector, building supply services, professional and technical professions etc. These benefits will be largely temporary but will contribute to the overall future viability of the construction sector and related services and professions over the phased construction period.

3.5.6.2 Operational Phase

The operational phase of the proposed development will result in the provision of 815 no. residential dwellings, a commercial retail unit, community floorspace, 2 no. creches and open spaces to serve the subject lands. Based on the mix and potential occupancy the proposal could potentially result in a population of c. 2,195 persons when fully built and occupied (based on 1.5 persons per 1-bedroom unit, 2.5 persons per 2-bedroom unit and 3.5 persons per 3-bedroom unit +). This increase in occupancy in the area will enhance local spending power and will support a wide range of additional local businesses, services, transport infrastructure and employment opportunities, which will accrue. The proposal will provide much needed residential accommodation and accords with National Policy on delivering Sustainable Residential Communities and is considered a positive permanent slight impact.

With reference to employment during the operational phase, it is estimated that the proposed commercial unit development could generate between c. 45 and 55 no. Full Time Equivalent positions¹⁰.

3.5.7 SOCIAL PATTERNS

3.5.7.1 Construction Phase

¹⁰ Employment Densities Guide 3rd Edition

The construction phase of the proposed development is unlikely to have any significant impact on social patterns within the surrounding area. Some temporary additional local populations may arise out of construction activity. However, these impacts are imperceptible, temporary in nature and therefore not considered significant.

It is acknowledged that the construction phase of the project may have some short-term negative impacts on residents, educational facilities and businesses. Such impacts are likely to be associated with construction traffic and possible nuisances associated with construction access requirements. These impacts are dealt with separately and assessed elsewhere in the EIAR, including Chapter 2 - Project Description and Alternatives Examined, Chapter 7/8 - Air Quality and Climate and Chapter 9 - Noise and Vibration. Any disturbance is predicted to be commensurate with the normal disturbance associated with the construction industry where a site is efficiently and properly managed having regard to neighbouring activities. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts to nearby residents. A Construction Environmental Management Plan (prepared by Paul McGrail Consulting Engineers) has been prepared and is submitted with this planning application. The mitigation contained in Chapter 17 of this EIAR and the CEMP (in Appendix D of Volume III of the EIAR and the NIS by Altamar) will be contained in the contractor's CEMP.

3.5.7.2 Operational Phase

Once operational, the proposed development will enable the delivery of much needed additional residential accommodation across the surrounding lands. The addition of new roads and trunk infrastructure to the area will also improve the available vehicular and pedestrian access in the area through the creation of new linkages between the existing road network and the establishment of new pedestrian pathways and cycle lanes which help to support and encourage the usage of more active travel modes through the area, which will also have significant social benefits to future communities in the area through the appropriate provision of high-quality public transport connections. In all, the proposed development will enhance the vibrancy and vitality of the area and will help to support existing community and social infrastructure. This is an imperceptible positive long-term impact.

3.5.8 LAND-USE & SETTLEMENT PATTERNS

3.5.8.1 Construction Phase

The construction phase of the proposed development will primarily consist of site clearing, excavation and construction works, and the laying of the proposed roads and trunk infrastructure on site and has the potential to impact adversely and result in the temporary degradation of the local visual environment on a short-term basis. The visual impacts precipitated by the proposed development are assessed in greater detail in Chapter 10 of the EIAR 'Landscape and Visual Impacts'.

Secondary land use impacts include off-site quarry activity and appropriate disposal sites for removed spoil and other materials transported off site. Chapter 12 Material Assets Waste considers these potential impacts in more (as well as the Resource Waste Management Plan – Appendix E Volume III of the EIAR) describes the relevant mitigation measures).

The phase may result in a marginally increased population in the wider area due to increased construction employment in the area, however, this would be temporary in nature and the impact would be imperceptible.

3.5.8.2 Operational Phase

The operational phase of the proposed development will result in the introduction of 815 no. residential dwellings, a commercial retail unit, community floorspace and 2 no. creches and open spaces to serve the LRD development, delivering wider public realm improvements, in accordance with national and local planning policy objectives. The proposed development will accommodate an adequate provision of high-

quality housing to serve the existing and future population of the county and the wider Greater Dublin Area. This is an important contributor to the establishment and maintenance of good human / public health. The high-quality design of the proposed development will contribute to a positive impact on the wellbeing of future residents.

3.5.9 HOUSING

3.5.9.1 Construction Phase

The proposed development will not result in any impact in terms of loss of housing stock during the construction stage.

3.5.9.2 Operational Phase

The operational phase of the proposed development will result in the provision of 815 no. residential dwellings, community floorspace and 2 no. creches and open spaces. In this respect, the proposed development will accommodate an additional population of approximately 2,194 no. people.

The proposed development will therefore, in time, respond to established housing need and demand in the area of the subject lands, and the wider region. The future residential units at this location will assist in addressing the significant shortfall of residential development.

The surrounding Ladywell lands will deliver a range of housing unit sizes and types and will incorporate a high level of good quality public open space through the provision of a new large, green public urban parks.

The delivery of significant, well-designed and high-quality residential developments at an appropriate location close to public transport links will have a direct, positive, and significant impact on the future residents of the Ladywell, Balbriggan lands and will support the population growth targeted for the Fingal area and Dublin City.

3.5.10 EMPLOYMENT

The impact of the proposed development in relation to employment has been discussed under economic activity.

3.5.11 HEALTH & SAFETY

The surrounding context consists of a mix of residential, educational and commercial lands. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which might result in a risk to human health and safety. It is not within the consultation zone of a SEVESO Site as defined by the Health and Safety Authority. Chapter 15 – Risk Management addresses the potential health and safety aspects of the proposed development during the construction and operational phases.

In the absence of mitigation, the proposed development could have a slight negative, short-term impact on the surrounding area during construction phase due to traffic and associated nuisance, dust and noise. These issues and appropriate mitigation measures are addressed in Chapters 7, 8 and 12 of the EIAR, in the Traffic and Transportation Assessment, Construction Environmental Management Plan and the RWMP and OWMP contained in Appendix D and Appendix E respectively. The Traffic and Transportation Chapter (11) recommends that a Construction Traffic Management Plan be implemented for the site which will minimise disruption to the surrounding road network, which will be submitted and agreed with the Planning Authority.

No significant health and safety effects are envisaged during either the construction or operational phases of the proposed development. The standard Health and Safety policy, procedures and work practices of

the proposed development will conform to all relevant health and safety legislation both during the construction and operational stages of the proposed development. The proposed development will be designed and constructed to best industry standards, with an emphasis being placed on the health and safety of employees, local residents and the community at large.

3.5.11.1 Construction Phase

The construction methods employed, and the hours of work proposed will be designed to minimise potential impacts. The development will comply with all Health & Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the impact on the construction phase will be reduced. A Construction Environmental Management Plan has been prepared by Paul McGrail Consulting Engineers and the measures specified therein will be in conjunction with the mitigation measures contained in this EIAR be adopted by the contractor.

3.5.11.2 Operational Phase

The operational stage of the development will not precipitate long term negative impacts in terms of health and safety. The design of the proposed development has been formulated to provide for a safe environment for future residents and visitors alike. The proposed development in its entirety has been designed in accordance with best practice and the applicable guidelines including DMURS, to ensure the development promotes a high standard of health and safety for all occupants and visitors.

The Air Quality Chapter (Ch 7) of the EIAR predicts that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health and that there will be a negligible impact on local air quality generated by increased traffic movements associated with the development.

The proposed development will not cause significant impacts on human health and safety once completed and operational, and any impact will be imperceptible, and unlikely.

3.5.12 RISK OF MAJOR ACCIDENTS OR DISASTERS

Chapter 14 – Risk Management addresses the potential risks of major accidents or disasters relating to the proposed development during the construction and operational phases.

3.5.13 CONSTRUCTION PHASE

The location of the proposed development is within Flood Zone C and it is unlikely there will be any impacts related to a major accident or disaster during the construction phase of the proposed development, stemming internally from within the development, or externally.

The works proposed in proximity to roadways will be governed by best practice and appropriate safety procedures, ameliorating any risk of a major accident in those contexts.

3.5.14 OPERATIONAL STAGE

The proposed development will be located on land which is not at any significant risk of flooding. The Eastern CFRAM (Catchment Flood Risk Assessment and Management) study details the predicted risk for a variety of fluvial and coastal flood scenarios. The proposed development is therefore outside of the Q100 and Q1000 flood extents and is therefore in within Flood Zone C (low risk of flooding). The proposed development is appropriate for the application site's flood zone categories and that the proposed development is considered to have the required level of flood protection.

Therefore, it is considered that there is no likely significant risk related to major accidents or disasters, external or internal, man-made or natural in respect of the proposed development.

3.6 POTENTIAL CUMULATIVE IMPACTS

The potential cumulative impacts of the proposed development on population and human health have been considered in conjunction with the ongoing changes in the surrounding area. Visits to the subject site and surrounding area and desk-based review of online planning files have been undertaken to identify the existing pattern of development, nearby uses, and any permitted / ongoing developments of relevance to the current proposals in the context of population and human health. The surrounding area is defined by a broad and varied mix of uses, including residential, commercial, recreational and civic uses.

The lands on which the proposed development is to take place are predominantly zoned to “*provide for new residential communities subject to the provision of the necessary social and physical infrastructure*”, under the Fingal County Development Plan 2023-2029. This zoning will see more development to the surrounding the subject lands. The proposed development serves as Phase 5 of the overall development scheme at the Ladywell/ Folkstown landbank. Previous phases are set out in Chapter 17, and are under construction.

The operational phase of the proposed development will result in the provision of 815 no. residential dwellings, a commercial retail unit, community floorspace, 2 no. creches and open spaces to serve the subject lands. Based on the mix and potential occupancy the proposal could potentially result in a population of c. 1815 persons when fully built and occupied (based on 1.5 persons per 1-bedroom unit, 2.5 persons per 2-bedroom unit and 3.5 persons per 3-bedroom unit +). This increase in occupancy in the area will enhance local spending power and will support a wide range of additional local businesses, services, transport infrastructure and employment opportunities, which will accrue.

Based on the mix and potential occupancy the permitted adjoining Phase 4 LRD development at Ladywell/ Folkstown could potentially result in a population of c 1,165 when fully built and occupied.

In terms of employment the combined additional working population could be in the region of some 75 persons across the phases.

The development of the wider Ladywell scheme will influence demographic change, population growth, and the intensity of commercial use in this area, cumulatively contributing to increasing population and employment growth in the wider area into the future which represents a positive cumulative impact which accords with the planning policy context for the area.

An increase in local housing, and some increase in employment opportunities and service provision (i.e. crèches, retail and employment) has the potential to generate direct, indirect impacts. The visual appearance of the landscape will be altered with the introduction of the proposed built elements including infrastructure, in cumulation with other development in the area. Implementation of the remedial and reductive measures in respect of noise/traffic management etc. in the EIAR would ensure a minimal impact on the existing communities of this area during the construction phase.

The cumulative impact of the proposed development, along with other permitted and existing developments in the vicinity, will be a further increase in the population of the wider area. This will have a moderate positive long-term impact on the population in the immediate area of Ladywell/ Folkstown, and a slight positive long-term impact in the wider area of Balbriggan.

Chapter 7 (Air Quality) states that the operational phases of the subject development and other permitted residential developments in the local area will not generate cumulative air emissions that will have an adverse impact on local ambient air quality. Measured baseline air quality and national published air quality data confirm that the existing air quality is good and that the operational phases of the subject development and other local proposed developments will have a long-term imperceptible impact on existing air quality.

Chapter 9 (Noise and Vibration) states that once the subject development is completed and if the lands to the north are developed there will be no residual adverse noise impact on the receiving environment

associated with their operation. Increased traffic movements associated with both developments will generate a long-term not significant impact on the local noise climate during peak hour times.

The overall cumulative impact of the proposed development will therefore be long term and positive as residents will benefit from a high quality, visually attractive living environment, with strong links and pedestrian permeability. Having regard to the assessment of cumulative impacts, it is not considered that any additional mitigation measures are required further to those which are outlined above.

3.7 '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.

A 'do nothing' scenario would result in the subject lands remaining fallow and undeveloped. This would be an underutilisation of the subject site from a sustainable planning and development perspective.

In the do-nothing scenario, the absence of the proposed development would perpetuate the housing shortfall in the Dublin area, contrary to the aims and objectives of national, regional, and local planning and housing policy, all of which promote the delivery of additional housing at strategic locations such as the subject site.

The local economy would not experience the direct and indirect positive effects of the construction phase of development, including employment creation. The local construction sector and associated industries and services would be less viable than they might otherwise be.

The 'do-nothing' scenario would result in the status of the environmental receptors described throughout this EIAR document remaining unchanged. The potential for any likely and significant adverse environmental impacts arising from both the construction and operational phases of the proposed development would not arise. In terms of the likely evolution without implementation of the project as regards natural changes from the baseline scenario, it is considered there would be limited neutral change from the baseline scenario in relation to population (human beings) and human health.

3.8 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential likely and significant environmental impacts.

3.8.1 CONSTRUCTION PHASE

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and human health during the construction phases being avoided. Readers are directed to Chapter 17 of this EIAR document which summarises all of the remedial and mitigation measures proposed as a result of this EIAR.

In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction Environment Management Plan will be submitted by the contractor and implemented during the construction phase. The content of the CEMP will be based on the mitigation set out in this EIAR and NIS.

With reference to the construction phase of the proposed development, the objectives of the Resource and Waste Management Plan and Operational Waste Management Plan, both prepared by AWN Consulting (contained in Appendix E Volume III of the EIAR and also Chapter 11 of the EIAR) is to ensure

that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with.

3.8.2 OPERATIONAL PHASE

The operational phase will enable the delivery of much needed additional residential accommodation across the surrounding lands. The addition of new roads and trunk infrastructure to the area will also improve the available vehicular and pedestrian access in the area through the creation of new linkages between the existing road network and the establishment of new pedestrian pathways and cycle lanes which help to support and encourage the usage of more active travel modes through the area, which will also have significant social benefits to future communities in the area through the appropriate provision of high-quality public transport connections.

During the operational phase of the development the design of the entire scheme has had regard to Design Manual for Urban Roads and Streets (DMURS) during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

For the operational phase, no further specific mitigation is required having regard to the mitigation included within the other chapters of this EIAR.

3.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section provides a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied. It should be noted that in addition to remedial and mitigation measures, impact avoidance measures have also been built into the EIAR and project design processes through the assessment of alternatives described in Chapter 2 of this EIAR document. Impact interactions are considered further in Chapter 15.

There are numerous inter-related environmental topics described throughout this EIAR document which are also of relevance to Population and Human Health. For detailed reference to the residual impacts of particular environmental topics please refer to the relevant corresponding chapter of the EIAR (land and soils, water and hydrology, air quality and climate, noise and vibration, traffic, and risk management).

3.9.1 CONSTRUCTION PHASE

The construction phase of the proposed development will primarily consist of site clearance, excavation and construction works, which will be largely confined to the proposed development site (including haul routes). Notwithstanding the implementation of remedial and mitigation measures there will be some minor temporary residual impacts on population (human beings) and human health most likely with respect to nuisance caused by construction activities, predominantly related to noise and traffic as detailed in chapters 9 and 11.

It is anticipated that subject to the careful implementation of the remedial and mitigation measures proposed throughout this EIAR document, and as controlled through the Construction and Environmental Management Plan any adverse likely and significant environmental impacts will be avoided. The overall predicted likely impact of the construction phase will be short-term not significant, and neutral. A CEMP (with the mitigation contained in this EIAR) will be developed by the contractor and submitted to the Local Authority.

Imperceptible, positive short-term impacts are likely to arise due to an increase in employment and economic activity associated with the construction of the proposed development.

3.9.2 OPERATIONAL PHASE

The proposed development will result in a generally positive alteration to the existing undeveloped site in terms of the provision of new roads and trunk infrastructure to serve the growing residential and working population of the area in accordance with the objectives of the Fingal County Council Development Plan. Positive impacts on population and human health will include health benefits associated with the provision of a significant quantity of open space, pedestrian and cyclist/green routes, a highly permeable layout which will connect to the adjacent existing road network.

The implementation of the range of remedial and mitigation measures included throughout this EIAR document is likely to have the impact of limiting any adverse significant and likely environmental impacts of the operational phase of the proposed development on population and human health (as set out in relevant chapters land and soils, water and hydrology, air quality and climate, noise and vibration, traffic, and risk management).

This chapter of the EIAR has provided an assessment of the likely impact of the proposed development on population and human health. As set out above, the proposed development will result in a long-term positive indirect impact on housing and is not likely to result in any significant negative effects on population and human health, and will result in some other positive impacts, including travel patterns of a sustainable and appropriate capacity through increased access and permeability.

3.9.3 CUMULATIVE

The cumulative impact of the proposed development, along with other permitted and existing developments in the vicinity, will be a further increase in the population of the wider area into the future. This will have a moderate positive long-term impact on the population in the immediate area of Ladywell/Folkstown and a slight positive long-term impact in the wider area of Balbriggan.

Chapter 7 (Air Quality) states that the operational phases of the subject development and other permitted residential developments in the local area will not generate cumulative air emissions that will have an adverse impact on local ambient air quality. Measured baseline air quality and National published air quality data confirm that the existing air quality is good and that the operational phases of the subject development and other local proposed developments will have a long-term imperceptible impact on existing air quality.

Based on the mix and potential occupancy the permitted adjoining Phase 4 LRD development at Ladywell/Folkstown could potentially result in a population of c. 565 when fully built and occupied (based on 1.5 persons per 1-bedroom unit, 2.5 persons per 2-bedroom unit and 3.5 persons per 3-bedroom unit +). This proposed phase could result in some 2,194 persons.

In terms of employment the combined additional working population could be in the region of some 75 persons across the phases.

Chapter 9 (Noise and Vibration) states that the cumulative noise and vibration impacts associated with the proposed development and future local developments will not result in an increased impact on the closest receptors to the proposed development site.

There is a possibility that multiple developments in the area could run concurrently or overlap in the construction phase and contribute to additional impacts in terms of traffic, dust and noise. However, the mitigation measures highlighted above and included in the individual chapters of this EIAR, along with the fact that any other significant construction project in the area would also likely require an EIAR and inclusion of mitigation measures to reduce the cumulative impacts to sensitive receptors in the area. The

construction phase of the proposed development together with any relevant other planned or permitted developments would have a positive impact in terms of employment. Contractors for the proposed development would be required to operate in compliance with a project-specific CMP and FCTMP (See Appendix F Volume III of the EIAR), which will include mitigation measures outlined in this EIAR. It is considered that there would be no cumulative effects on human health. The mitigation contained in Chapter 17 of this EIAR as well as the NIS and CEMP (Appendix D Volume III of the EIAR) will be contained in the contractor's CEMP.

3.9.4 'WORST-CASE' SCENARIO

The failure of the proposed development to proceed will mean that the proposed new residential accommodation would not be constructed resulting in the failure to realise the development potential of the surrounding landholdings in terms of delivering new housing or local employment. However, failure of the proposed development to proceed or failure of any proposed mitigation measures, will not lead to any profound, irreversible or life-threatening consequences. In these circumstances no further consideration of this scenario is necessary in respect of health, community, employment or population issues.

3.10 MONITORING

In relation to the impact of the development on population and human health it is considered that the monitoring measures outlined in this EIAR with regard to the other environmental topics such as water, air quality and climate and noise and vibration sufficiently address monitoring requirements.

3.11 REINSTATEMENT

While not applicable to every aspect of the environment considered within the EIAR, certain measures may be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment.

There are no reinstatement works proposed specifically with respect to population and human health.

3.12 DIFFICULTIES ENCOUNTERED IN COMPILING

No significant particular difficulties were experienced in compiling this chapter of this EIAR document.

4.0 BIODIVERSITY

The Biodiversity assessment has been undertaken by Altamar Limited. It assesses the biodiversity value of the proposed development area and the potential impacts of the development on the ecology of the surrounding area and within the potential zone of influence (ZOI). Standard construction and operational phase control measures, in addition to monitoring measures, are proposed to minimise potential impacts of the proposed development and to improve the biodiversity potential of the proposed development site post construction.

4.1 INTRODUCTION

The programme of work in relation to biodiversity assessment was designed to identify and describe the existing ecology of the area and detail designated sites, habitats or species of conservation interest that could potentially be impacted by the proposed development. It also assesses the significance of the likely impacts of the scheme on the biodiversity elements, and designs mitigation measures to alleviate identified impacts.

A separate AA Screening and Natura Impact Statement, in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced to identify potential impacts of the development on Natura 2000 sites, Annex species or Annex habitats. It concludes that

“Following the implementation of the mitigation measures outlined, the construction and operation of the proposed development would not be deemed to adversely affect the integrity of the North-West Irish Sea SPA, alone in combination with other plans and projects. No significant adverse effects are likely on all other Natura 2000 sites, in the absence of mitigation, alone in combination with other plans and projects.

This report presents an Appropriate Assessment Screening and NIS for the proposed development. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites’ conservation objectives, will adversely affect the integrity of the European site.

On the basis of the content of this report, the competent authority is enabled to conduct an Appropriate Assessment and consider whether, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites’ conservation objectives, will adversely affect the integrity of the European site.

No significant effects are likely on Natura 2000 sites, their features of interest or conservation objectives. The proposed project will not will adversely affect the integrity of European sites.”

4.1.1 STATEMENT OF AUTHORITY

Altamar Ltd. is an established environmental consultancy that is based in Greystones, Co. Wicklow that has been in operating in Ireland since 2001. Bryan Deegan MCIEEM is the Managing Director of Altamar Ltd. and holds a M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology and a National Diploma in Applied Aquatic Science. He has over 28 years’ experience as an environmental consultant in Ireland and was the ecologist for all aspects of this project. Previous projects where Altamar were the lead project ecologists include the Lidl Ireland GmbH regional distribution centres in Newbridge and Mullingar, 18 airside projects for daa at Dublin Airport and 7 fibre optic cable landfalls in Ireland including the New York to Killala cable project in 2015.

Frank Spellman, holds a MSc in Zoology, (Trinity College Dublin) and a BSc Zoology (University College Dublin.) and is a full time member of Altamar staff. He has extensive experience in ornithological and in mammal assessments.

Jack Doyle (MSc Sustainable Environments) is a full-time member of staff at Altamar and has extensive experience in carrying out a wide range of fauna surveys, including both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, and breeding/wintering bird surveys.

Joseph Adamson (MCIEEM) is a senior ecologist with wide ranging experience in the field of ecology and ornithology. For the past number of years Joe has specialised in wind farms on upland blanket bog environments, often evaluating sites using a multidisciplinary approach, by incorporating vegetation and topographical characteristics. Joe has worked on over forty wind farm projects throughout Ireland and has extensive experience in bird identification and monitoring bird movements. Joseph carried out wintering bird assessments onsite in Spring 2023 and Winter 2023/2024.

4.2 STUDY METHODOLOGY

This chapter has been prepared having regard to the following guidelines:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018).
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022).
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment.(European Commission, 2013).
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2 (National Roads Authority, 2009)
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018).
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016)
- Bat Mitigation Guidelines for Ireland V2 (Marnell, *et al*, 2022)
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2006a)
- Bird Monitoring Methods - A Manual of Techniques for Key UK Species (Gilbert *et al.*, 1998).
- Best Practice Guidance for Habitat Survey and Mapping (Smith *et al.*, 2011).
- Guide to Habitats in Ireland (Fossitt, 2000).

A pre-survey biodiversity data search was carried out in March 2020 and revised in June 2023, October 2023, and August 2025. This included examining records and data from the National Parks and Wildlife Service (NPWS), National Biological Data Centre (NBDC) and the Environmental Protection Agency (EPA), in addition to aerial, 6-inch maps and satellite imagery. A habitat survey of the site was undertaken within the appropriate seasonal timeframe for terrestrial fieldwork. Field surveys were carried out as outlined in Table 4.1.

Table 4.1: Assessment of key ecological areas in the Environmental Impact Assessment

Survey Type	Surveyors	Survey Dates
Terrestrial Ecology	Bryan Deegan (Altamar)	20 th June 2019, September 11 th 2021, 12 th May 2023, 27 th June 2023, 22 nd May 2025, 14 th August 2025
Mammal Assessment	Bryan Deegan, Jack Doyle (Altamar);	18 th March 2021, 20 th April 2021 & 8 th April 2023, 05 th March 2025, 11 th March 2025.
Breeding Birds	Frank Spellman (Altamar)	12 th May 2023, 22 nd April 2025, 9 th May 2025 and 22 nd May 2025

Survey Type	Surveyors	Survey Dates
Bat Fauna	Bryan Deegan, Frank Spellman, Jack Doyle (Altamar)	20 th April 2021, 08 th June 2023, 13 th June 2023, 27 th June 2023, 22 nd May 2025, & 14 th August 2025
Wintering Bird Survey	Joesph Adamson Frank Spellman & Jack Doyle (Altamar)	27 th and 28 th February & 7 th , 18 th and 21 st March 2023. 25 th and 29 th October 2023, the 4 th and 20 th November 2023, the 4 th and 24 th December 2023, the 8 th and 18 th January 2024, the 5 th and 19 th of February 2024 and the 3 rd and 11 th March 2024. 22 nd /29 th October 2024, 19 th /22 nd November 2024, 3 rd /10 th December 2024, 22 nd /28 th January 2025, 6 th /23 rd February 2025, 5 th /11 th March 2025

Desk studies were carried out to obtain relevant existing biodiversity information within the Zone of Influence (ZOI). As outlined in Office of the Planning Regulator (2021) “*The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source- Pathway-Receptor framework and not by arbitrary distances (such as 15 km).*” The proposed development site is primarily a greenfield site consisting of arable land located within a suburban / agricultural environment at Balbriggan, Co. Dublin. After consultation with Paul McGrail Consulting Engineers, it was outlined that, after attenuation on-site, surface water drainage will be directed to the arterial drainage network currently servicing the existing housing estate to the east of the site and the road network to the south, which in turn outfalls to the Bremore Stream, Clonard Brook Stream, and, ultimately, the marine environment. Foul wastewater drainage will ultimately be discharged to an existing foul drainage network. Foul wastewater will be treated along this public network under licence.

As a result, there is an indirect hydrological pathway from the proposed development to designated conservation sites located within the marine environment. Additionally, given that excavation and construction works are proposed in close proximity to surface water drainage networks that outfall to the Clonard Brook Stream, there is the potential for dust and contaminated surface water to enter the proximate watercourse and impact on downstream aquatic biodiversity. In this case, the potential ZOI extends beyond the site, with the potential for downstream impacts to extend beyond the proposed development area via the proposed construction works and the surface water networks. Details of the proposed development are seen in **Chapter 2** of this EIAR. The proposed project construction methodology, layout, drainage strategy, Construction Environmental Management Plan, design and landscape design were reviewed to inform this assessment. Further, the other chapters within the EIAR were assessed.

4.2.1 PROXIMITY TO DESIGNATED CONSERVATION SITES AND HABITATS OR SPECIES OF CONSERVATION INTEREST

The designated conservation sites within 15km, and beyond 15km with the potential for a direct or indirect pathway, of the site were examined for potential impact. This assessment included sites of international importance; Natura 2000 sites (Special Areas of Conservation (SAC), Special Protection Areas (SPA)) and Ramsar sites and sites of National importance ((Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA)). Up to date GIS data (2023 NPWS data shapefiles) were acquired and plotted against 1, 5, 10 and 15km buffers from the proposed development site. A data search of rare and threatened species within 10km of the proposed site (GIS shapefile) was provided by NPWS. Additional

information on rare and threatened species was researched through the National Biodiversity Data Centre maps.

4.2.2 TERRESTRIAL AND AVIAN ECOLOGY

A pre-survey data search was carried out. This included a literature review to identify and collate relevant published information and ecological studies previously conducted and comprised of information from the following sources; the National Parks and Wildlife Service, NPWS Rare and Protected Species Database, National Biodiversity Data Centre, EPA WMS watercourses data, in addition to aerial, 6 inch, satellite imagery. Following the desktop study, walk-over assessments of the site were carried out on the as outlined in Table 4.1. Surveys were carried out by means of a thorough search within the potential ZOI. The presence of mammals is indicated principally by their signs, such as resting areas, feeding signs or droppings - though direct observations are also occasionally made. Camera traps were also established throughout the site to determine mammal activity onsite. Habitat mapping was carried out according to Fossitt (2000) using ArcGIS 10.5 and QGIS 3.28.15 and displayed on Bing satellite imagery or street mapping. Any rare or protected species or habitats were noted. As part of the fieldwork, an invasive species assessment was carried out. Birds noted on site were classed based on the Birds of Conservation Concern in Ireland classification of red, amber and green, which is based on an assessment of the conservation status of all regularly occurring birds on the island of Ireland. See Appendix H Volume III of the EIAR (Appendices 4.2 – 4.5 for full details).

4.2.3 BAT FAUNA

Onsite trees and buildings were inspected for bats and/or their signs using a powerful torch (141 Lumens) – Petzl MYO RXP. The site survey was supplemented by a review of Bat Conservation Ireland's (BCIreland) National Bat Records Database. Bat detector and emergent surveys were carried out by Bryan Deegan, Frank Spellman, and Jack Doyle on the 20th of April 2021, 08th of June 2023, 13th of June 2023, 27th of June 2023, 22nd of May 2025, and 14th of August 2025. See Appendix H Volume III of the EIAR (Appendix 4.1 for full details).

4.2.4 RATING OF EFFECTS

The terminology for rating impacts is derived from the EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

4.2.5 DIFFICULTIES ENCOUNTERED

No difficulties were encountered in relation to the preparation of the Biodiversity report. The bat surveys were undertaken within the active bat period (April to September) and detector surveys were possible. Insects were observed in flight during the bat survey. Flora, amphibian, habitat and mammal assessments were carried out within the optimal survey period. A series of wintering bird surveys were carried out onsite during the 2024/2025 wintering period Refer to Appendix H Volume III of the EIAR (see Appendix 4.3 for full details), winter 2023/2024 and spring 2023 (see Appendix 4.4 & 4.5).

4.2.6 CONSULTATION

Consultation was carried out with the project team in relation to the proposed project. Rare and protected species data was acquired from the National Parks and Wildlife Service (NPWS).

4.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

4.3.1 ZONE OF INFLUENCE

The potential ZOI of the project was deemed to be the site within the site outline with potential for downstream impacts to the marine environment via the proposed foul and surface water drainage strategy. This site outline is shown in figure 4.1.

4.3.2 DESIGNATED SITES

As can be seen from Figures 4.2 (SAC's within 15km), 4.3 (SPA's within 15km), 4.4 (NHA and pNHA within 15km), 4.5 (Watercourses proximate to the site), there are two Natura 2000 sites (North-West Irish Sea SPA and River Nanny Estuary and Shore SPA) within 5km and two National conservation sites (Knock Lake pNHA and Bog Of The Ring pNHA, and Liffey Valley pNHA) within 5km of the proposed development site. The distance and details of the conservation sites within 15km of the proposed development, and beyond 15km with the potential for a hydrological pathway, are seen in Table 4.2a and Table 4.2b. There is an indirect hydrological pathway to designated conservation sites located within Irish Sea via the proposed foul and surface water drainage strategy. After consultation with Paul McGrail Consulting Engineers, it was outlined that, after attenuation on-site, surface water drainage will be directed to the arterial drainage network currently servicing the existing housing estate to the east of the site and the road network to the south, which in turn outfalls to the Clonard Brook Stream, Bremore Stream, and, ultimately, the marine environment. Foul wastewater drainage will ultimately be discharged to an existing foul drainage network. Foul wastewater will be treated along this network at the Balbriggan / Skerries Wastewater Treatment Plant. Given excavation and construction works are proposed in close proximity to surface water drainage networks and drainage ditches that outfall to the Clonard Brook Stream and Bremore Stream, and out of an abundance of caution, there is the potential for dust and contaminated surface water to enter the proximate watercourse network and impact on downstream aquatic biodiversity and the North-West Irish Sea SPA (located immediately downstream of the Bremore Stream). In this case, the potential ZOI extends beyond the site, with the potential for downstream impacts to extend beyond the proposed development area via the proposed construction works and the surface water networks. Watercourses and designated conservation sites located proximate to the proposed development site are demonstrated in Figures 4.6-4.12.

Table 4.2a: Natura 2000 sites within 15km, and beyond 15km with the potential for a hydrological pathway, of the proposed development

Natura 2000 Site	Distance	Direct Hydrological / Biodiversity Connection
Special Areas of Conservation (SAC)		
Rockabill to Dalkey Islands SAC	9.6 km	No
Boyne Coast and Estuary SAC	9.6 km	No
Rogerstown Estuary SAC	11.1 km	No

River Boyne And River Blackwater SAC	12.9 km	No
Malahide Estuary SAC	14.7 km	No
Special Protection Areas (SPA)		
North-West Irish Sea SPA	1.5 km	No
River Nanny Estuary and Shore SPA	3.7 km	No
Skerries Islands SPA	7.9 km	No
Rockabill SPA	10.1 km	No
Rogerstown Estuary SPA	11.2 km	No
Boyne Estuary SPA	11.6 km	No
Malahide Estuary SPA	14.7 km	No

Table 4.3: Nationally designated and Ramsar sites within 15km, and beyond 15km with the potential for a hydrological pathway, of the proposed development

Designation	Conservation Sites	Distance	Direct Hydrological / Biodiversity Connection
NHA	Skerries Islands	7.9 km	No
pNHA	Knock Lake	1.9 km	No
pNHA	Bog Of The Ring	2.6 km	No
pNHA	Laytown Dunes/Nanny Estuary	5.4 km	No
pNHA	Cromwell's Bush Fen	7.4 km	No
pNHA	Loughshinny Coast	9.2 km	No
pNHA	Boyne Coast And Estuary	9.6 km	No
pNHA	Rogerstown Estuary	11.2 km	No
pNHA	Rockabill Island	13.4 km	No
pNHA	Duleek Commons	13.9 km	No
pNHA	Portraine Shore	14.1 km	No
pNHA	Malahide Estuary	14.7 km	No
Ramsar	Rogerstown Estuary	11.3 km	No
Ramsar	Broadmeadow Estuary	14.7 km	No

Figure 4.1: Proposed Development Site



Figure 4.2: Special Areas of Conservation within 15km

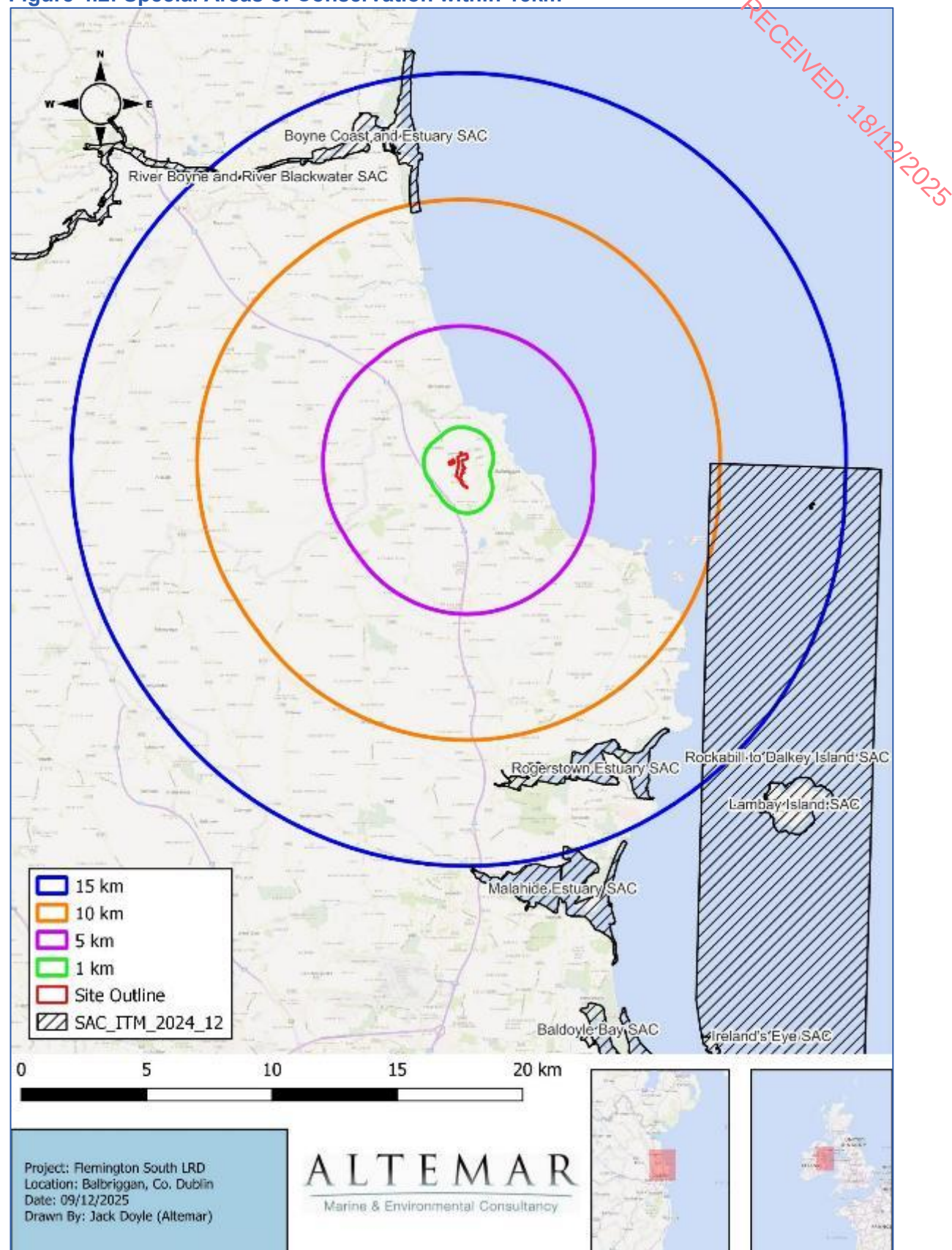


Figure 4.3: Special Protection Areas within 15km

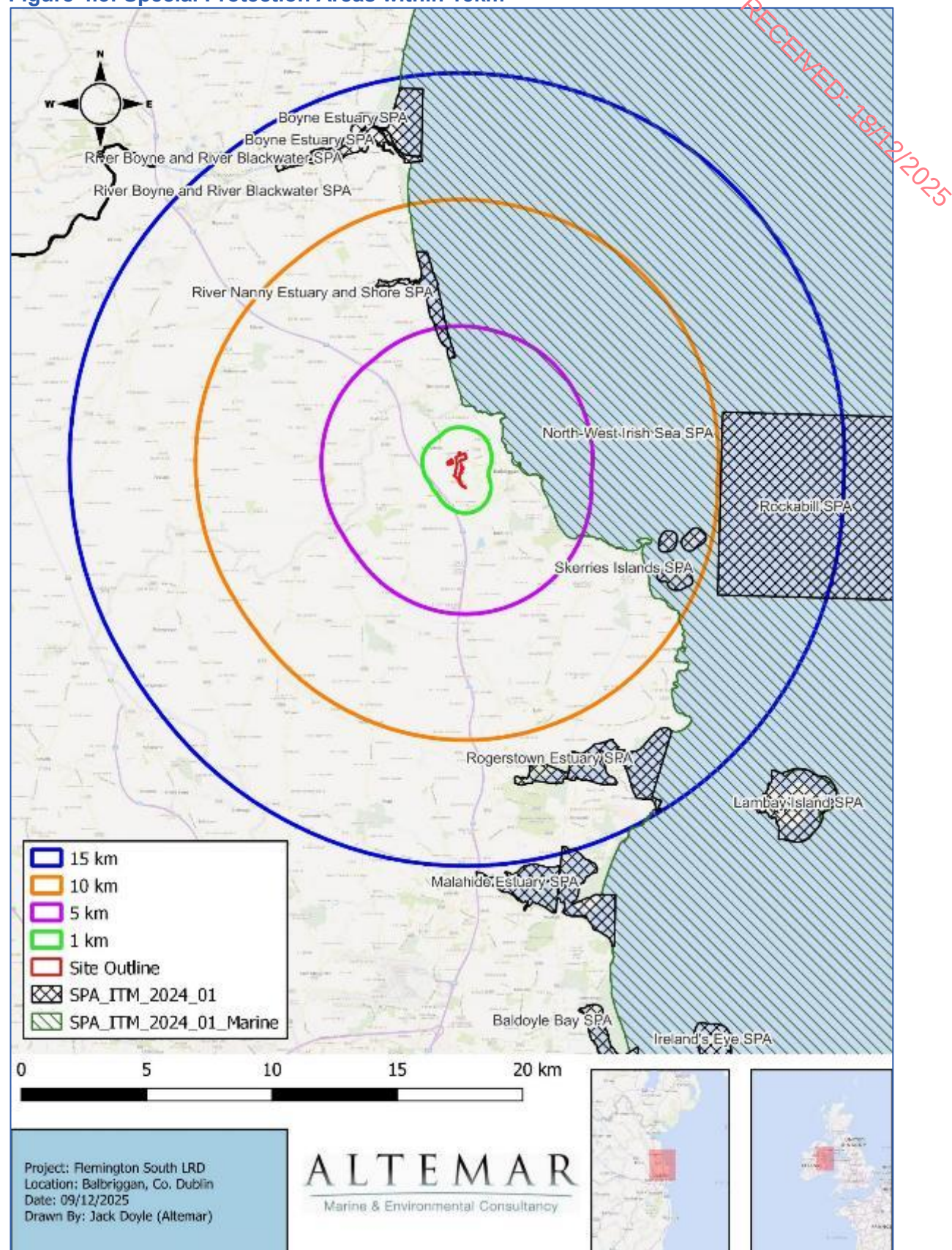


Figure 4.4: Natural Heritage Areas and proposed Natural Heritage Areas within 15km

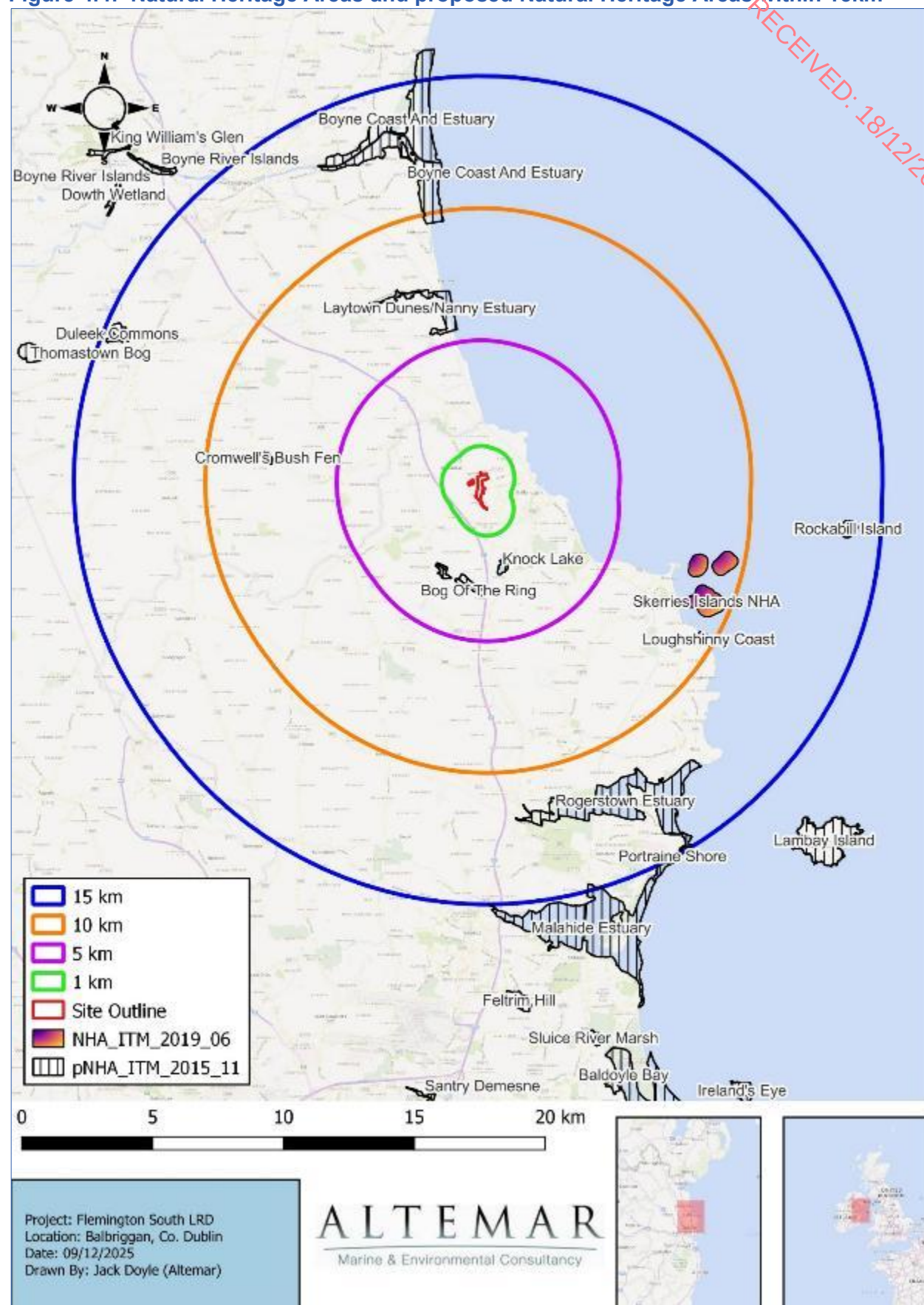


Figure 4.5: Ramsar Sites within 15km

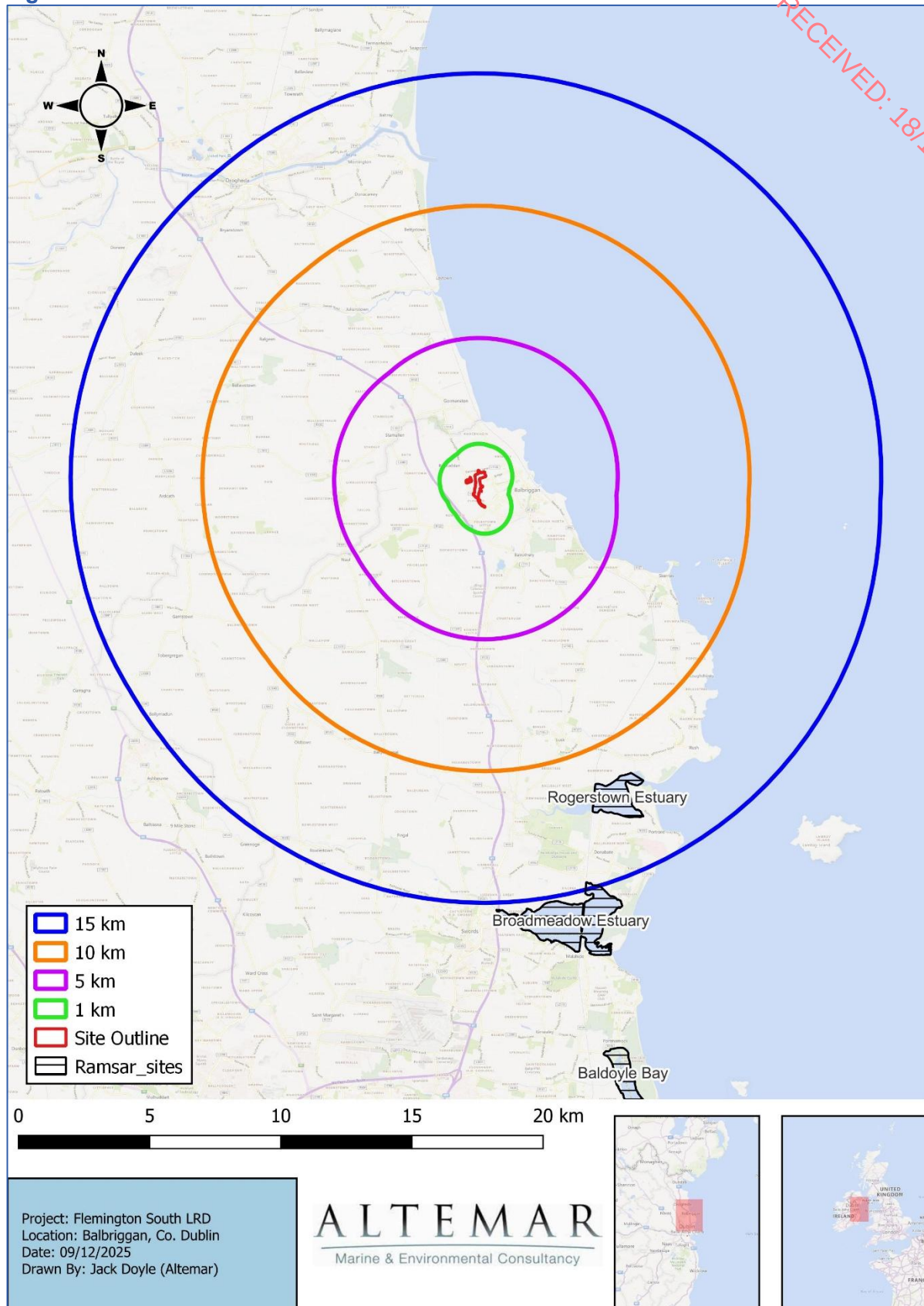


Figure 4.6: Waterbodies within 1km of the site



Figure 4.7: Waterbodies and SACs with the potential for a hydrological connection

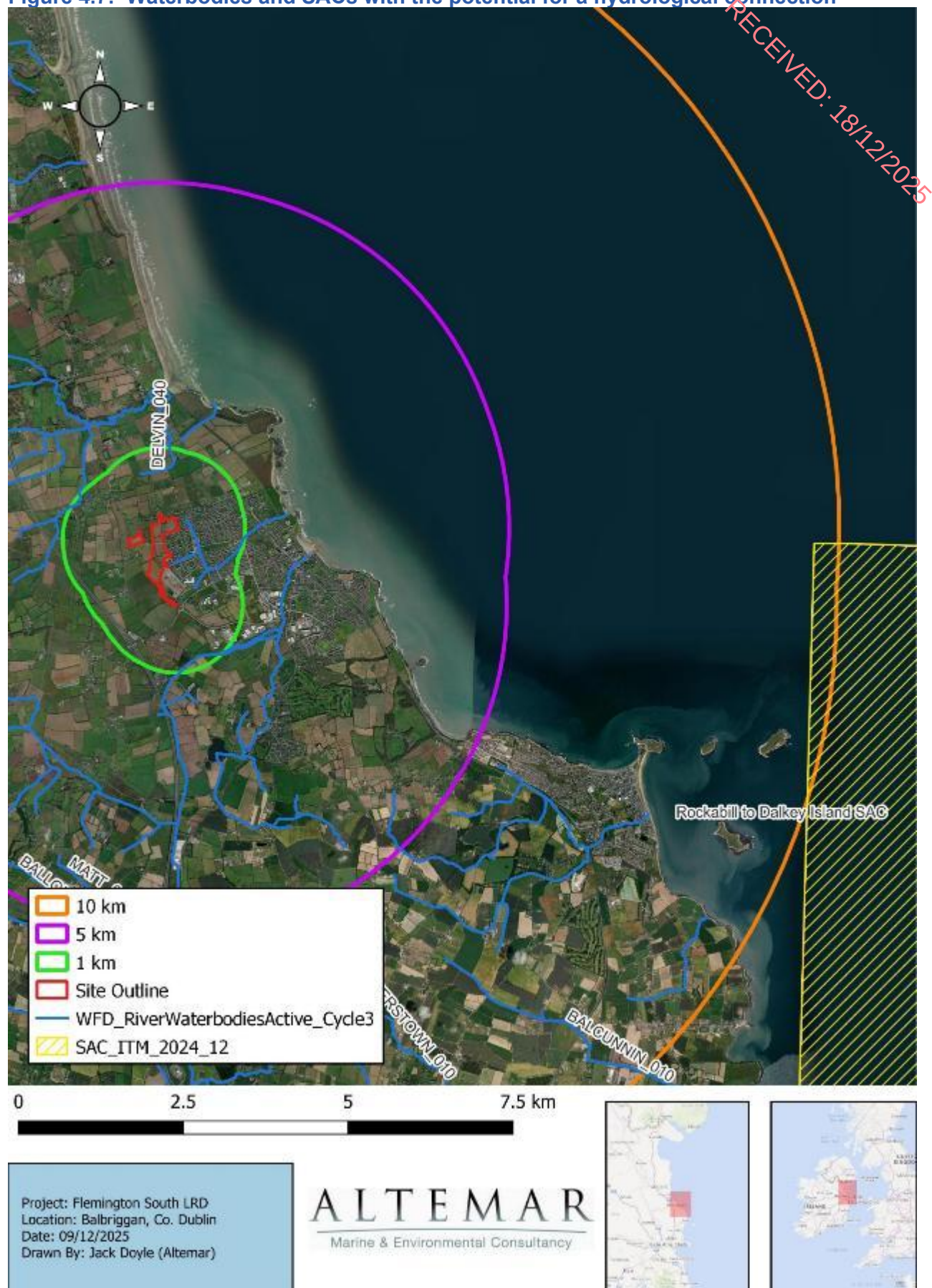


Figure 4.8: Waterbodies and SPAs with the potential for a hydrological connection

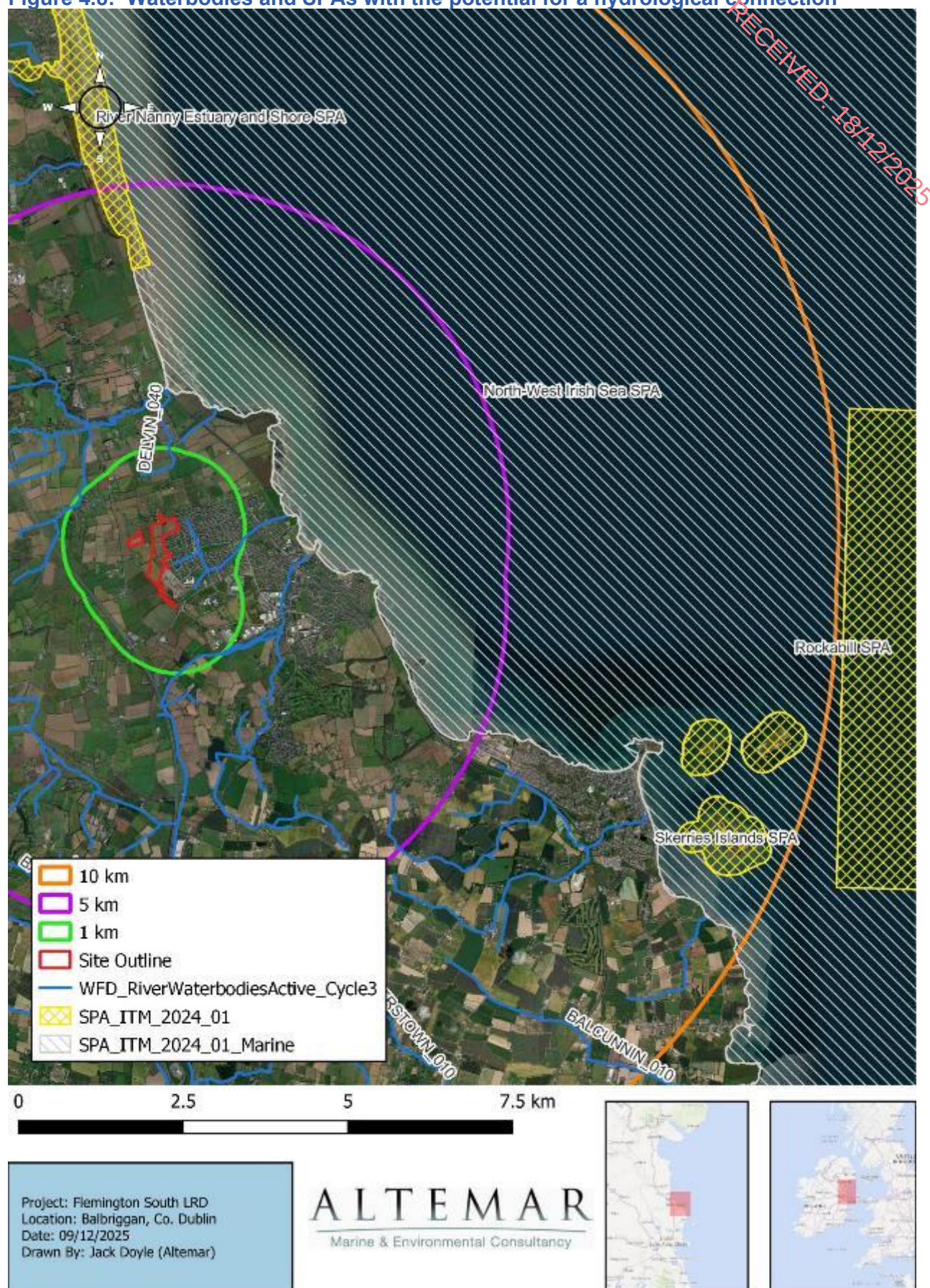
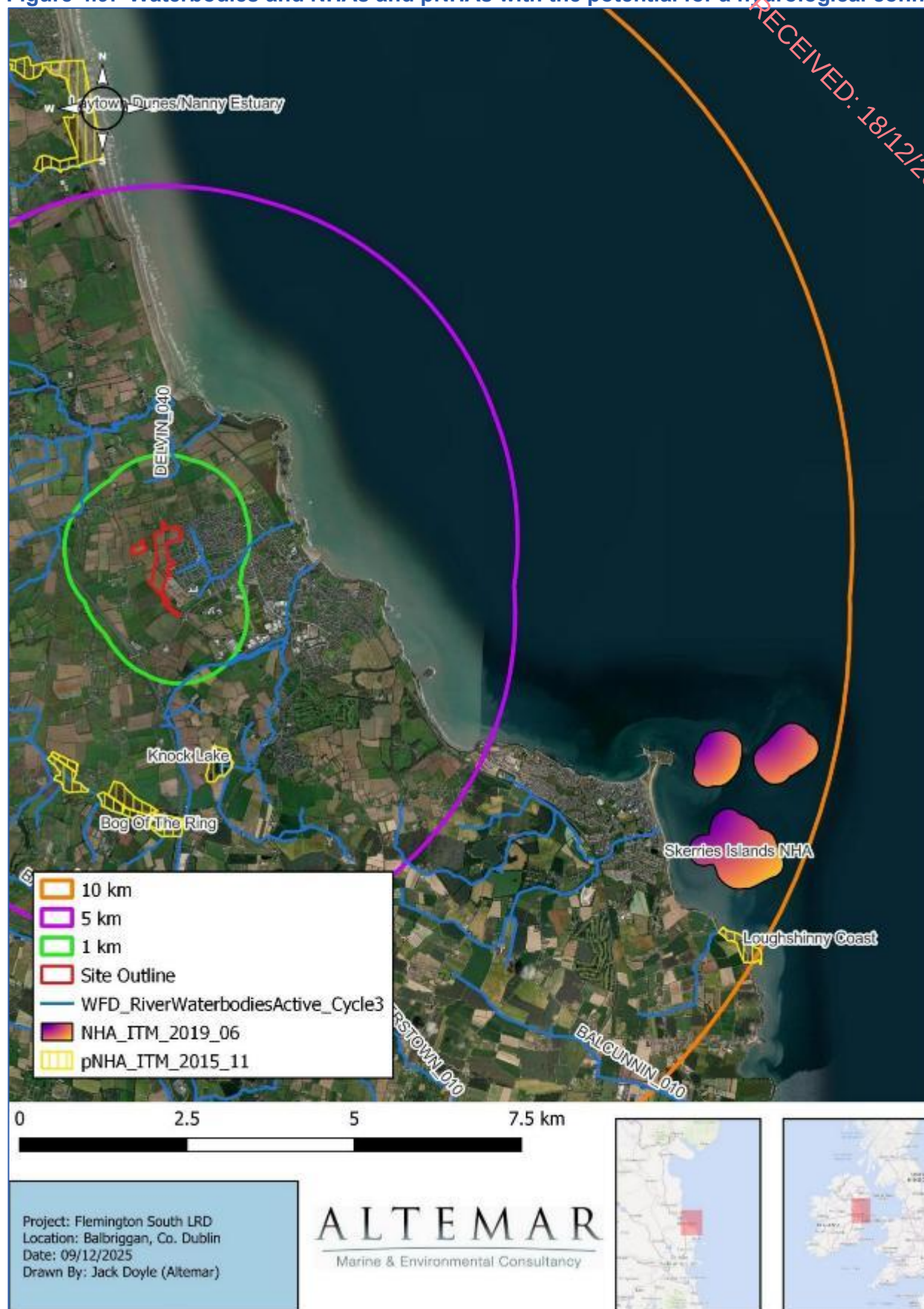


Figure 4.9: Waterbodies and NHAs and pNHAs with the potential for a hydrological connection



4.3.3 SPECIES DATA

It should be noted that no species of conservation importance were noted on site, based on NPWS and NBDC records as fine resolution. Species that possess a specific designation, such as Invasive Species or Protected Species recorded within the four 2km² grids that encompass the site are seen in Table 4.4.

Table 4.4: National Biodiversity Data Centre Records within the four 2km grids (O16S, O16R, O16W, O16X)

Badger (*Meles meles*); Barn Owl (*Tyto alba*); Bar-tailed Godwit (*Limosa lapponica*); Black-headed Gull (*Chroicocephalus ridibundus*); Black-tailed Godwit (*Limosa limosa*); Brent Goose (*Branta bernicla*); Brown Long-eared Bat (*Plecotus auritus*); Brown Rat (*Rattus norvegicus*); Butterfly-bush (*Buddleja davidii*); Common Dolphin (*Delphinus delphis*); Common Frog (*Rana temporaria*); Common Guillemot (*Uria aalge*); Common Gull (*Larus canus*); Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*); Common Porpoise (*Phocoena phocoena*); Common Scoter (*Melanitta nigra*); Cormorant (*Phalacrocorax carbo*); Corn Marigold (*Glebionis segetum*); Curlew (*Numenius arquata*); Daubenton's Bat (*Myotis daubentonii*); Dunlin (*Calidris alpina*); Goldcrest (*Regulus regulus*); Golden Plover (*Pluvialis apricaria*); Great Black-backed Gull (*Larus marinus*); Great Crested Grebe (*Podiceps cristatus*); Great Northern Diver (*Gavia immer*); Greenfinch (*Chloris chloris*); Greenshank (*Tringa nebularia*); Grey Plover (*Pluvialis squatarola*); Grey Seal (*Halichoerus grypus*); Greylag Goose (*Anser anser*); Grey wagtail (*Motacilla cinerea*); Harlequin Ladybird (*Harmonia axyridis*); Hedgehog (*Erinaceus europaeus*); Herring Gull (*Larus argentatus*); Himalayan Honeysuckle (*Leycesteria formosa*); House Martin (*Delichon urbicum*); House Sparrow (*Passer domesticus*); Jack Snipe (*Lymnocyrtus minimus*); Japanese Knotweed (*Fallopia japonica*); Jenkins' Spire Snail (*Potamopyrgus antipodarum*); Kestrel (*Falco tinnunculus*); Kingfisher (*Alcedo atthis*); Kittiwake (*Rissa tridactyla*); Knot (*Calidris canutus*); Lapwing (*Vanellus vanellus*); Leisler's Bat (*Nyctalus leisleri*); Lesser Black-backed Gull (*Larus fuscus*); Linnet (*Linaria cannabina*); Little Egret (*Egretta garzetta*); Meadow Pipit (*Anthus pratensis*); Merlin (*Falco columbarius*); Mistle Thrush (*Turdus viscivorus*); New Zealand Flatworm (*Arthurdendyus triangulatus*); Oystercatcher (*Haematopus ostralegus*); Peregrine (*Falco peregrinus*); Pheasant (*Phasianus colchicus*); Pink-footed Goose (*Anser brachyrhynchus*); Purple Sandpiper (*Calidris maritima*); Rabbit (*Oryctolagus cuniculus*); Razorbill (*Alca torda*); Red-breasted Merganser (*Mergus serrator*); Redshank (*Tringa totanus*); Redwing (*Turdus ilacus*); Red-tailed Bumblebee (*Bombus lapidarius*); Red-throated Diver (*Gavia stellata*); Ringed Plover (*Charadrius hiaticula*); Robin (*Erithacus rubecula*); Rock Dove (*Columba livia*); Sand Martin (*Riparia riparia*); Sandwich Tern (*Thalasseus sandvicensis*); Shag (*Gulosus aristotelis*); Short-eared Owl (*Asio flammeus*); Skylark (*Alauda arvensis*); Snipe (*Gallinago gallinago*); Soprano Pipistrelle (*Pipistrellus pygmaeus*); Spanish Bluebell (*Hyacinthoides hispanica*); Sparrowhawk (*Accipiter nisus*); Spotted Flycatcher (*Muscicapa striata*); Starling (*Sturnus vulgaris*); Spotted Redshank (*Tringa erythropus*); Starling (*Sturnus vulgaris*); Stock Dove (*Columba oenas*); Stonechat (*Saxicola rubicola*); Swallow (*Hirundo rustica*); Swift (*Apus apus*); Sycamore (*Acer pseudoplatanus*); Tree Sparrow (*Passer montanus*); Turnstone (*Arenaria interpres*); Velvet Scoter (*Melanitta fusca*); Water Rail (*Rallus aquaticus*); Willow Warbler (*Phylloscopus trochilus*); Woodpigeon (*Columba palumbus*); Yellowhammer (*Emberiza citrinella*)

No species of conservation importance have been noted on site by NPWS.

4.3.4 SITE SURVEY

The most recent site assessment was carried out on the 14th of August 2025. Habitats within the proposed development site were classified according to Fossitt (2000) (Figure 4.10) and the species noted within each habitat are described.

Figure 4.10: Fossitt Habitats onsite



BC1 Arable crops

A number of arable crop fields (BC1) are located throughout the site. These habitats were dominated by wheat (*Triticum aestivum*). Opportunistic flora species were present. Species noted included creeping buttercup (*Ranunculus repens*), rambling fumitory (*Fumaria muralis*), corn marigold (*Glebionis segetum*), thistles (*Cirsium spp.*), dandelion (*Taraxacum spp.*), docks (*Rumex spp.*), and common vetch (*Vicia sativa*). No species of conservation importance were noted.

Plate 1. Arable crops BC1



BL3- buildings and artificial surfaces

Buildings and artificial surfaces consist of roads including a newly constructed road which traverses the site. A metal barn (Plate 2) and derelict house (Plate 3) are located to the north of the site. Bat assessments were carried out, and no bats were noted roosting in the buildings on site. It is important to note however that approximately 16 barn swallows (*Hirundo rustica*) (Amber listed) were nesting in the metal barn.

Plate 2. BL3 – Metal Barn with nesting swallows



RECEIVED: 18/12/2025

Plate 3. BL3 – Derelict House



ED3 Recolonising Bare Ground

As can be seen from figure 4.10, a pocket of Recolonising Bare Ground has developed in the southeastern portion of the site in previously cleared ground. In this area, previously grown crops have not been replanted and therefore consists of an area of Recolonising Bare Ground. This site is being recolonised

by opportunistic species such as dandelion (*Taraxacum spp.*), clover (*Trifolium spp.*), docks (*Rumex spp.*), thistles (*Cirsium arvense* & *C. vulgare*), willowherb (*Epilobium parviflorum*), pineappleweed (*Matricaria discoidea*), and ragwort (*Jacobaea vulgaris*).

FW4-Drainage ditch

A drainage ditch is located along a hedgerow located to the southeast of the subject site (see Figure 4.10). This drainage ditch appears to serve the adjacent agricultural fields to the north and south. Standing water was observed within this habitat, with lady-fern (*Athyrium filix-femina*) growing along its banks.

GA1-Improved agricultural grassland

Plate 4. GA1-Improved agricultural grassland



This habitat is located to the south of the subject site. This habitat comprises of species-poor grassland with a short sward resulting from grazing practices (sheep noted within these fields). Species recorded include dandelion (*Taraxacum spp.*), clover (*Trifolium spp.*), docks (*Rumex spp.*), and thistles (*Cirsium arvense* & *C. vulgare*).

GS2-Dry meadows and grassy verges

Throughout the centre and northern portions of the site, GS2 – Dry meadows and grassy verges habitats have developed from land previously utilised for arable crops (as evident in 2023 flora survey). These areas were not planted with arable crops in the intervening years, and opportunistic grassland species encroached onto these areas. These habitat pockets are dissected by a number of trails, established by dogwalkers from the adjacent residential developments (observed by surveyor). Species noted within this habitat included Thistles (*Cirsium spp.*), bush vetch (*Vicia sepium*), bramble (*Rubus fruticosus agg*), creeping buttercup (*Ranunculus repens*), nettle (*Urtica dioica*), Dandelion (*Taraxacum spp.*), dock (*Rumex spp.*), groundsell (*Senecio vulgaris*), broad bean (*Vicia faba*), gorse (*Ulex europaeus*), birdsfoot trefoil (*Lotdasyus corniculatus*), greater plantain (*Plantago major*), white clover (*Trifolium repens*), ragwort (*Jacobaea vulgaris*), wild radish (*Raphanus raphanistrum*), smooth hawksbeard (*Crepis capillaris*), tufted

vetch (*Vicia cracca*), rose-bay willowherb (*Chamaenerion angustifolium*), nipplewort (*Lapsana communis*), marigold (*Glebionis spp.*), scarlet pimpernel (*Anagallis arvensis*), spiny sowthistle (*Sonchus asper*).

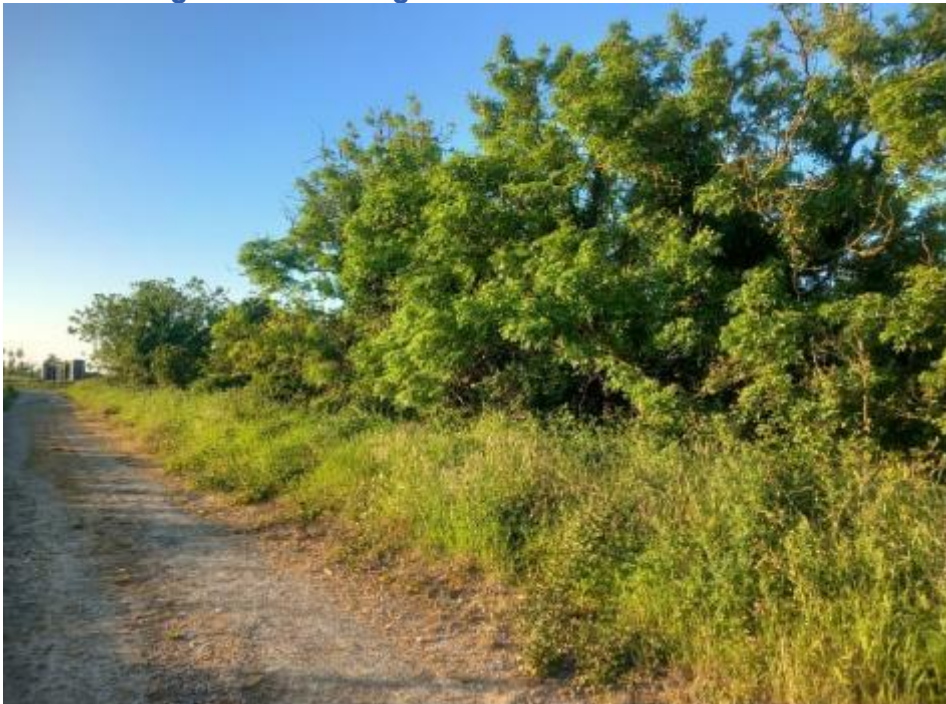
Plate 5. GS2-Dry meadows and grassy verges



WL1- Hedgerows

Hedgerows were noted within the site on the field boundaries (Plate 6). These varied significantly in their condition and have been unmanaged for several years. Proximate to the building to the north of the site a cluster of semi mature ash (*Fraxinus excelsior*) (with ash dieback noted) formed the field boundaries.

Plate 6. Hedgerow dissecting centre of site



The remainder of the site had more traditional hedgerows. However, the condition varied considerably from linear mature traditional hedgerow (Plate 6) to fractured hedgerow dominated by bramble. Species including elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), common fumitory (*Fumaria officinalis*), dog-rose (*Rosa canina*), bramble (*Rubus fruticosus* agg.), hedge bindweed (*Calystegia sepium*), cleavers (*Galium aparine*), willow (*Salix* sp.), gorse (*Ulex europaeus*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), ivy (*Hedera helix*) and cleavers (*Galium aparine*) were noted.

4.3.4.1 Evaluation of Habitats

The proposed development site consists primarily of arable crops with grassland, recolonising bare ground, dry meadows and grassy verges, derelict structures and hedgerows. No habitats of conservation importance were noted on site.

Birds

Breeding birds

A series of breeding bird surveys were carried out onsite during the 2025 breeding season by Altamar (see Appendix 4.2 for full details). 11 green-listed bird species of conservation concern were recorded breeding within the survey area; blackbird, blackcap, blue tit, chaffinch, dunnoek, goldfinch, hooded crow, robin, song thrush, woodpigeon and wren. Five amber-listed bird species of conservation concern were recorded breeding within the survey area; herring gull, house sparrow, linnet, starling and swallow. One red-listed bird species of conservation concern was recorded breeding within the survey area; yellowhammer. Four hotspots of breeding activity were identified, two in the north (treeline/hedgerow and agricultural buildings), one in the centre (hedgerow) and one in the east (treeline/scrub) within the survey area.

Wintering Birds

A series of wintering bird surveys were carried out onsite during the 2024/2025 wintering period by Altamar (see Appendix 4.3 for full details), the 2023/2024 wintering period and spring 2023 by Joseph Adamson (MCIEEM) See Appendix H Volume III of the EIAR (see Appendix 4.4 & 4.5).

As outlined in Appendix H Volume III of the EIAR (Appendix 4.3): 'A total of 31 species were recorded within, above and adjacent to the survey area across 12 surveys (see Appendix 1a for individual observations). 19 green, nine amber and three red species of conservation concern were recorded either within, over and adjacent to the overall survey area.'

Table 4.5: Species recorded within, above and/or immediately adjacent to the survey area (2024/2025)

Common name	BTO	Latin name	BoCVM
Blackbird	B.	<i>Turdus merula</i>	Green
Black-headed Gull	BH	<i>Larus ridibundus</i>	Amber
Blue Tit	BT	<i>Cyanistes caeruleus</i>	Green
Brent Goose	BG	<i>Branta bernicla hrota</i>	Amber
Buzzard	BZ	<i>Buteo buteo</i>	Green
Chaffinch	CH	<i>Fringilla coelebs</i>	Green
Collared Dove	CD	<i>Streptopelia decaocto</i>	Green
Common Gull	CM	<i>Larus canus</i>	Amber
Dunnoek	D.	<i>Prunella modularis</i>	Green
Feral Pigeon	FP	<i>Columba livia f. domestica</i>	Green
Goldfinch	GO	<i>Carduelis carduelis</i>	Green
Great Tit	GT	<i>Parus major</i>	Green
Greenfinch	GR	<i>Chloris chloris</i>	Amber
Herring Gull	HG	<i>Larus argentatus</i>	Amber
Hooded Crow	HC	<i>Corvus cornix</i>	Green
House Sparrow	HS	<i>Passer domesticus</i>	Amber
Jackdaw	JD	<i>Corvus monedula</i>	Green
Kestrel	K.	<i>Falco tinnunculus</i>	Red
Linnet	LI	<i>Carduelis cannabina</i>	Amber
Meadow Pipit	MP	<i>Anthus pratensis</i>	Red
Mistle Thrush	M.	<i>Turdus viscivorus</i>	Green
Pheasant	PH	<i>Phasianus colchicus</i>	Green
Robin	R.	<i>Erithacus rubecula</i>	Green
Rook	RO	<i>Corvus frugilegus</i>	Green
Skylark	S.	<i>Alauda arvensis</i>	Amber
Song Thrush	ST	<i>Turdus philomelos</i>	Green
Sparrowhawk	SH	<i>Accipiter nisus</i>	Green
Starling	SG	<i>Sturnus vulgaris</i>	Amber
Woodpigeon	WP	<i>Columba palumbus</i>	Green
Wren	WR	<i>Troglodytes troglodytes</i>	Green
Yellowhammer	Y.	<i>Emberiza citrinella</i>	Red

As outlined in Appendix H Volume III of the EIAR (Appendix 4.4): 'A total of twenty-two bird species was observed during the Winter 2023/2024 bird survey. Two Red-Listed species, namely meadow pipit and yellowhammer were observed during the site visits. The two Red -Listed species may breed within the site. Three Amber-Listed species, herring gull, starling, skylark, greenfinch and linnet were observed during the site visits. The only Amber-Listed species that may breed within the site are greenfinch and linnet. All other species observed are Green-Listed, species of favourable conservation status.'

As outlined in Appendix H Volume III of the EIAR (Appendix 4.5): 'A total of nineteen bird species were observed during the Winter site visits. Two Red-Listed species, namely meadow pipit and yellowhammer were observed during the site visits. The two Red-Listed species may breed within the site. Three Amber-Listed species, herring gull, starling and linnet were observed during the site visits. The only Amber-Listed species that may breed within the site is linnet. All other species observed are Green-Listed, species of favourable conservation status.'

Birds observed at the Flemington Lane site are typical of the habitats present. The species assemblage is a reflection of the agricultural fields, hedgerows and overgrown waste ground habitats within and around the site and the birds observed are typical of birds occurring in these habitats in North County Dublin in Winter." In relation, to yellowhammer (redlisted) as outlined in Appendix H Volume III of the EIAR Appendix 4.4b "A single individual was flushed from one of the OSR fields on the 18th March. A male and female was observed on the 21st of March. A scarce bird in Ireland, but can be quite frequently observed in parts of North County Dublin and Meath.'

Plant Species

The plant species encountered at the various locations on site are detailed above. No rare or plant species of conservation value were noted during the field assessment. Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened plant species were recorded in the vicinity of the proposed site. No invasive plant species that could hinder removal of soil from the site during groundworks, such as Japanese knotweed, giant rhubarb, Himalayan balsam or giant hogweed were noted on site.

Bat Fauna

Bat foraging was noted on site and noted to be particularly active in the vicinity of ash treelines located to the north of the site. Trees of bat roosting potential are noted on site. However, no confirmed bat roosts were noted onsite. It should be noted that no bats were recorded emerging from the derelict buildings located to the north of the site.

Amphibians/Reptiles

No amphibian or reptile activity was noted on site.

Terrestrial Mammals

No badgers or badger activity was noted on site. No resting or breeding places of mammals of conservation importance have been noted on site. A single instance of an Irish Stoat (*Mustela erminea Hibernica*) transiting along a hedgerow located immediately west of the site boundary was recorded by a camera trap. No confirmed resting or breeding place for this species was recorded onsite. Hare (*Lepus timidus*) were observed within arable cropland to the south of the site.

4.4 DO NOTHING SCENARIO

The site would continue to be farmed and the biodiversity value would remain stable.

4.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Existing buildings are located to the north of the site and are proposed to be demolished and vegetation throughout the site will be removed as part of the initial stages of the works. It should be noted that a number of hedgerows are being retained onsite.

The Proposed Development is described in further detail in Chapter 2 The characteristics of the proposed development with regard to hydrology environment are outlined below.

4.5.1 CONSTRUCTION PHASE

The key civil engineering works which will have a potential biodiversity including the hydrological environment during construction of the proposed development are summarised below:

- Demolition of existing buildings on site.
- Site clearance and enabling works
- Excavations are required for foundations of the proposed buildings and installation of associated services included within the development.
- Possible discharge of collected rainwater during excavation works and groundworks (the extent of which is dependent on the time of year development works are carried out).
- Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site.

4.5.2 OPERATION PHASE

4.5.2.1 Foul Sewage

The foul water drainage system for the proposed development has been designed in accordance with the Irish Water Code of Practice and will be separate to the surface water drainage system. The foul water from the development will discharge via soil vent pipes within the buildings by gravity flow before connecting into the existing separate foul sewer network within the development. The foul sewerage for each house will have a separate connection to the proposed 225mm and 150mm diameter foul sewer along the road.

The existing pipes were checked for capacity using the following criteria. Pipes carrying foul sewage shall be designed to carry a peak flow of 6 times average foul sewage flow (6DWF). A roughness coefficient, k_s of 1.5mm is used for foul sewers. Foul drains are designed to achieve a minimum self-cleansing velocity of 0.75m/s when flowing half full.

Foul wastewater will be treated along this public network under licence.

4.5.2.2 Surface Water Drainage

The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. The drainage network will consist in 5No. catchment attenuating to the green-field runoff at the hydrobrake located in the outfall manhole from each attenuation system. The last hydrobrake manhole has been allowed for the agreed 50l/s attenuated flow coming from the catchment 02, as part of the Planning application for Taylor Hill, Balbriggan, Phase 3. Utilizing the topography of the site and the levels, the hydrobrakes have been adjusted to maximise the volume in each area.

The proposed development design incorporates the following SuDS features: modular permeable paving, swales, bioretention systems, detention basins, Stormtech Underground, petrol interceptors, and hydrobrakes.

Refer to Engineering Services Report (Paul McGrail Consulting Engineers, 2025) submitted as part of this planning application which details the proposed separate foul and surface water drainage system.

4.6 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

Altamar has consulted with the design team to limit the potential impact of the proposed development on biodiversity. The proposed development will involve the removal of the existing terrestrial habitats on site, re-profiling, excavations, and the construction of residential units.

4.6.1 CONSTRUCTION PHASE

The construction of the proposed development would impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during the site clearance, re-profiling, excavations, and the building phases of the proposed development.

Construction phase mitigation measures are required on site particularly as reprofiling of the site is proposed which will remove/alter existing terrestrial habitats and can lead to silt laden and contaminated runoff to proximate surface water drainage networks, the Clonard Brook Stream and Bremore Stream. In the absence of mitigation measures, and out of an abundance of caution, there is the potential for contaminated surface water runoff to enter proximate surface water drainage networks with the potential for downstream impacts on the Clonard Brook Stream and Bremore Stream, aquatic biodiversity, and the downstream North-West Irish Sea SPA. In addition, habitats of local importance are on site and need to be protected. Bats are noted on site and need to be protected during the construction stage. Barn swallows were noted nesting on site. Meadow Pipit (*Anthus pratensis*), Yellowhammer (*Emberiza citrinella*), and Kestrel (*Falco tinnunculus*) were also noted on site.

Designated Conservation sites within 15km, and outside 15km with a potential hydrological pathway

The proposed development is not within a designated conservation site. The nearest designated conservation site is North-West Irish Sea SPA (1.5 km). There is an indirect hydrological pathway to designated conservation sites located within Irish Sea via the proposed foul and surface water drainage strategy. Foul wastewater drainage will ultimately be discharged to an existing foul drainage network. Foul wastewater will be treated along this public network under licence. After consultation with Paul McGrail Consulting Engineers, it was outlined that, after attenuation on-site, surface water drainage will be directed to the arterial drainage network currently servicing the existing housing estate to the east of the site and road network south of the site, which in turn outfalls to the Bremore Stream and, ultimately, the marine environment.

Given the scale of the proposed development, the distance between the subject site to the nearest Natura 2000 Site (1.5 km to the North-West Irish Sea SPA) and the fact that the storm water drainage ultimately discharges to the Clonard Brook Stream and Bremore Stream, it is, therefore, considered that the ZOI of the proposed project includes the site outline, the Clonard Brook Stream and Bremore Stream and North-West Irish Sea SPA. In the absence of mitigation, and out of an abundance of caution, there is the potential for dust, pollutants, and contaminated surface water runoff to enter the Clonard Brook Stream and Bremore Stream during construction (via excavation, soil-stripping, transportation, demolition, and building works) with the potential for downstream impacts on North-West Irish Sea SPA. No significant effects on any other designated conservation sites are likely via this hydrological pathway. Any silt or pollutants that may enter this network will settle, be dispersed, or diluted within the surface water drainage network, watercourse network, and marine environment.

Impacts: Low adverse / International/ Negative Impact / Not significant / short term. Mitigation is needed to prevent impacts on the surface water drainage network, Clonard Brook Stream and Bremore Stream, and downstream North-West Irish Sea SPA.

Biodiversity

The impact of the development during construction phase will be a loss of the majority of existing habitats and species on site. In the absence of mitigation, it would be expected that the flora and fauna associated with these habitats would also be displaced.

Terrestrial mammalian species

No resting or breeding place of any protected terrestrial mammals were noted on site. Loss of habitat and habitat fragmentation may affect some common mammalian species. A single instance of an Irish Stoat (*Mustela erminea Hibernica*) transiting along a hedgerow located immediately west of the site boundary was recorded by a camera trap. No confirmed resting or breeding place for this species was recorded onsite. Hare (*Lepus timidus*) were observed within arable cropland to the south of the site.

Impacts: Low adverse / site / Negative Impact / Not significant / short term. Mitigation is needed in the form of a pre-construction survey for terrestrial mammals of conservation importance.

Flora

No protected flora was noted on site. Site clearance will remove a substantial portion of the flora species within the site boundaries. This includes hedgerows; however, a number of hedgerows will be retained onsite. Mitigation has been included in the design which included retention of perimeter hedgerows, replanting and the generation of additional perimeter hedgerows around the housing development.

Impacts: minor adverse / site / Negative Impact / Not Significant / Short term.

Bat Fauna

Bat foraging was noted on site and noted to be particularly active in the vicinity of ash treelines located to the north of the site. Trees of bat roosting potential are noted on site. However, no confirmed bat roosts were noted onsite. It should be noted that no bats were noted emerging from the derelict building located to the north of the site. Lighting during construction could impact on foraging activity. The demolition of buildings on site will require inspection prior to demolition.

Impacts: Minor adverse / local/ Negative Impact / Not significant / short term. Mitigation is needed in the form of ecological supervision of lighting on site and an inspection of onsite structures prior to demolition.

Aquatic Biodiversity

There is potential for dust, silt and pollutants to enter existing public surface water drainage networks on adjacent roads, drainage ditches, the Clonard Brook Stream and Bremore Stream during construction. In the absence of mitigation measures, there is potential for downstream effects on aquatic biodiversity.

Impacts: Low adverse / local / Negative Impact / Slight Effects / short term. Mitigation is needed in the form of control of dust, silt, and pollutants during construction to prevent downstream impacts on aquatic biodiversity.

Bird Fauna

Several bird species of conservation importance have been noted on site. Site clearance will result in the loss of a barn swallow nesting site and suitable nesting habitats for yellowhammer and meadow pipit. In the absence of mitigation, these birds could be displaced off site. It is important to note that similar agricultural fields are located immediately north of the site (which extend to Gormanstown). In the event that yellowhammer, kestrel, and meadow pipit are displaced from the site during construction, these species would be expected to utilise suitable foraging and nesting habitats within the immediate locality of the site. Hedgerows will be lost on site.

Impacts: Moderate adverse / Local / Negative Impact / Not significant / short term. Mitigation is needed in the form of site clearance outside bird nesting season and the inclusion of mitigation in relation to barn swallows.

4.6.2 OPERATIONAL PHASE

Once developed, the site would be seen as a stable ecological environment. Appropriate measures should be taken to prevent contaminated surface water run-off and silt into adjacent habitats. Light spill should be avoided during operation of the site particularly treelines. The construction of new drainage networks will have to comply with SUDS and County Council requirements and as a result would have negligible impact on habitats and species surrounding proposed development site.

Designated Conservation sites within 15km, and outside 15km with a potential hydrological pathway

Given that it is proposed to discharge surface water drainage to a surface water network that discharges to the Clonard Brook Stream and Bremore Stream, which in turn ultimately outfalls to the marine environment, in the absence of mitigation, and out of an abundance of caution, there is the potential for downstream impacts on the North-West Irish Sea SPA (located immediately downstream of the Bremore Stream) via contaminated surface water drainage which may enter the Clonard Brook Stream and Bremore Stream during operation.

Impacts: Low adverse / local / Negative Impact / Not significant / long term. Standard mitigation in relation to surface water is required.

Biodiversity

Biodiversity value of the site will improve as landscaping matures.

Terrestrial mammalian species

No resting or breeding place of any protected terrestrial mammals were noted on site.

Impacts: Low adverse / site / Negative Impact / Not significant / long term.

Flora

No protected flora or invasive species were noted on site. Landscaping will increase flora diversity on site. The landscape plan has been designed to create a net gain for hedgerows and trees onsite. 530 no. standard trees and 1,830 linear metres of native hedgerow will be planted onsite, compared to 34 no. trees and 1,581 linear metres of hedgerow scheduled for removal. A +10% net gain will be attained for trees and hedgerows onsite.

Impacts: Low beneficial / Neutral / site / Not significant / long-term.

Bat Fauna

The proposed development will change the local environment as new structures are to be erected and some of the existing vegetation will be removed. No bat roosts or potential bat roosts will be lost due to this development. A potential loss in foraging by four species of bats will be noted as a result of the proposed development. Large openspace areas will not be lit and would allow bats to continue to forage on site in these areas and where back gardens of houses abut native hedgerows. It should be noted that the public lighting has been designed to comply with bat lighting guidelines (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018). The proposed lamps have limited backward light properties thus assisting in reducing backward light spill. Lamps have also been specified with 0 Degree tilt to ensure

limited unwanted light spill. Lamps shall have a narrow spectrum and limited UV component. The proposed development would not be seen to have a significant collision risk for bat strikes.

Impacts: Minor adverse / International / Negative Impact / Not significant / long term. Mitigation is required in relation to light spill on site.

Aquatic Biodiversity

Standard measures will be in place in relation to surface water discharges. No additional mitigation is required.

Impacts: Low adverse / local / Negative Impact / Not Significant / Short term

Bird Fauna

Landscaping has been designed to include replanting of hedgerows on site. The proposed development will change the local environment as new structures are to be erected. The buildings are comprised of solid materials consisting of a solid material on the exterior which includes sections of concrete and glass. These buildings would be clearly visible to bird species and would not pose a significant collision risk. Nesting opportunities in relation to barn swallows, yellowhammer, and meadow pipit will be lost.

Impacts: Low adverse / site / Negative Impact / Not significant / long term. Mitigation is required in relation to the loss of nesting opportunities for barn swallows, yellowhammer, and meadow pipit.

4.7 'WORST CASE' SCENARIO

Impacts of Fire

Following construction of the development, fire would be seen as the main potential risk to the biodiversity, with potential downstream impacts. The implementation of SuDS features such as modular permeable paving, swales, bioretention systems, detention basins, Stormtech Underground, petrol interceptors, and hydrobrakes would slow and store contaminated runoff and act as a mitigation-by-design to prevent downstream impacts from a worst-case fire scenario.

4.8 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

4.8.1 CONSTRUCTION PHASE

- A project ecologist will be appointed to oversee all works.
- Onsite drains and drainage ditches will be protected from dust, silt and surface water throughout the works.
- Local silt traps established throughout site.
- Mitigation measures on site include dust control, stockpiling away from drains and drainage ditches.
- Stockpiling of loose materials will be kept to a minimum of 40m from drains and drainage ditches.
- Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system.
- Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, drainage ditches, excavations and other locations where it may cause pollution.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the surface water drainage network. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality.
- Petrochemical interception and bunds in refuelling area

- On-site inspections to be carried out by project ecologist.
- During the works silt traps will be put in place to prevent downstream impacts. Maintenance of any drainage structures (e.g. de-silting operations) will not result in the release of contaminated water to the surface water network.
- Prior to site clearance the ecologist and arborist will assess the site works and oversee habitat protection measures.
- Mitigation measures outlined in the bat survey report will be followed. This includes the inspection of buildings on site prior to demolition and the control of light spillage on site into adjacent habitats to avoid light spill of the surrounding hedgerows. Lighting on site during construction will be subject to approval of the ecologist and will not involve the lighting of the hedgerows.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). Should this not be possible, vegetation will be inspected by an ecologist for nesting birds prior to removal.
- Barn swallows are noted nesting on site. Demolition of all buildings on site and the timing of works will be subject to approval of the project ecologist. If nesting barn swallows are on site and works will be carried out within the bird nesting season, NPWS will be consulted prior to works commencing within 20m of the buildings and no works will proceed without the formal approval of NPWS.
- A pre-construction survey will be carried out for terrestrial mammals of conservation importance. If terrestrial mammals of conservation importance are noted on site NPWS will be consulted in relation to removal and the appropriate permissions obtained.

4.8.2 OPERATIONAL PHASE

- A project ecologist will be appointed to oversee completion of all landscape, lighting and drainage works.
- Petrochemical interception will be inspected by the project ecologist to ensure compliance with Water Pollution Acts.
- Post Construction assessment/compliance with proposed lighting strategy Mitigation During Operation
- Mitigation measures will be in place to comply with Water Pollution Acts.
- 20 x 10B Schwegler Swallow Nests will be placed in the vicinity of the built structures to the north of the site in the location of the existing barn, in consultation with and subject to the approval of the project ecologist.
- Replanting and the generation of additional perimeter hedgerows around the housing development will create compensatory nesting habitats for passerine species such as yellowhammer. 20 x bird boxes will also be placed in suitable areas throughout the site to the approval of the project ecologist to create nesting habitats for local bird populations. Open space areas (particularly west of the site) will also create potential nesting habitats for meadow pipit and hunting grounds for kestrels.

4.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

4.9.1 CONSTRUCTION PHASE

Based on the successful implementation of the construction phase controls and the works to be carried out in accordance with this EIAR and the accompanying AA Screening/NIS, it is likely that there will be no significant ecological impact arising from demolition or construction works proposed for the proposed project. Designated conservation sites will not be impacted by the proposed development during construction.

A robust series of standard construction phase control measures have been outlined to ensure that the proposed project does not impact on species or habitats of conservation importance, conservation areas

or watercourses during construction. It is essential that these measures are complied with to ensure that the proposed works do not have downstream environmental impacts. These measures are to protect the Clonard Brook Stream and Bremore Stream, which are potentially the primary vector of impacts from the site, is not impacted during construction phases of the proposed development.

No significant environmental impacts are likely in relation to the construction of the proposed development. Effects: Slight effects / site / Negative effect / Not significant / short term/likely. Standard mitigation will be in place on site.

4.9.2 OPERATIONAL PHASE

Based on the successful implementation of the operational phase controls and the works to be carried out in accordance with this EIAR and the accompanying AA Screening/NIS, it is likely that there will be no significant ecological impact arising from operation of the proposed project. Designated conservation sites will not be impacted by the proposed development.

Standard operational phase control measures have been outlined to ensure that the proposed project does not impact on species or habitats of conservation importance, conservation areas or watercourses. It is essential that these measures are complied with, to ensure that the proposed works do not have downstream environmental impacts. These measures are to protect the Clonard Brook Stream and Bremore Stream, which are potentially the primary vector of impacts from the site, is not impacted during operational phases of the proposed development.

No significant environmental impacts are likely in relation to the operation of the proposed development. Effects: Slight effects / site / Negative effect / Not significant / long term/likely. Standard mitigation will be in place on site.

4.10 MONITORING

4.10.1 CONSTRUCTION PHASE

A project ecologist will oversee works on site.

4.10.2 OPERATIONAL PHASE

A project ecologist will oversee works on site including the lighting, landscape, bird mitigation and drainage networks

4.11 REINSTATEMENT

4.11.1 CONSTRUCTION PHASE

A project ecologist will be appointed to oversee construction works on site.

4.11.2 OPERATIONAL PHASE

No operational monitoring/reinstatement is required.

4.12 CUMULATIVE IMPACT ASSESSMENT

A full description of relevant cumulative developments is included in Chapter 17. There are several proposed developments located in the area immediately surrounding the subject site. The following is a

list of planning applications in close proximity to the subject site as identified on the Department of Housing, Local Government and Heritage's 'National Planning Application Database' portal¹¹:

Table 4.6: Cumulative Impacts Evaluated

Ref:	Location	Description
F23A/0634	Stephenstown Business Park, Stephenstown, Balbriggan, County Dublin, K32X996	Permission for development at the existing waste recovery facility located at Stephenstown Business Park, Stephenstown, Balbriggan, County Dublin, K32X996. The development will consist of: (i) An increase in the total annual waste intake to 95,500 tonnes per annum for recovery; (ii) Revision of operating hours to include public holidays; (iii) Ancillary works comprising a covered bicycle store (6 no. spaces) and reconfiguration of the existing car parking area (7 no. car spaces and 1 no. motorcycle space) to include an electric vehicle charging point and associated underground cable ducting. The development will comprise an activity requiring a review of the existing Industrial Emissions licence (EPA reference no. P1014-01).
F22A/0480	Stephenstown Industrial Estate, Balbriggan, Dublin	The development will principally comprise the construction of a two-storey warehouse unit with ancillary office and staff facilities and associated development as well as a single storey garage. The warehouse unit will have a maximum height of 14.78 metres with a gross floor area of 1,996 sq m including warehouse area (1,670 sq m), ancillary staff facilities (184 sq m) and ancillary office area (142 sq m). The garage will have a maximum height of 14.358 metres and a gross floor area of 500sq m. Final Grant 5th April 2023.
F22A/0033	Lands at Harvest Lodge, Folkstown Lane (Folkstown Little Td) and lands at Folkstown Great Td, Naul Road, Balbriggan, Co Dublin.	The development will consist of a distillery (total floor area of floor area 5659m2) which includes provision of an ancillary visitor centre, storage shed along with associated external plant. Final Grant 10th February 2023
F23A/0075	Bremore Pastures, Balbriggan, Co. Dublin	Permission for the construction of 4no. two storey terraced 3 bedroom dwellings, rear garden areas, boundary walls, connections to existing services and all associated site development works at Bremore Pastures, Balbriggan, County Dublin.
F22A/0670	(on lands of c. 6.29 ha.) relating to: 'Phase 3' to be known as 'Ladywell', within the townlands of, 'Clonard or Folkstown Great', 'Clogheder' & 'Flemingtoun	The development will consist of Phase 3C as well as roads, services and public open space relating to the overall Phase 3 Ladywell lands as follows: A) 75 no. dwellings comprising 68 no. houses consisting of 22 no. 2 bedroom dwellings (House Types E1, E2, E4, E6, E7, E8, E9, G1, G2, G3, G4, G5), 41 no. 3 bedroom dwellings (House Types D1, D2, F1, F2, F3, F4, F4A, F5, F5A, N1, N2, N3), 2 no. 4 bedroom detached dwellings (house type M1) - all 2-storey), & 3 no. 5 bedroom detached dwellings [House Type K1 - 2.5 storeys - 3 floors), (in a mixture of semi-detached, terraced, end of terrace and detached units); all with associated private open space; B) 7 no. 1 bedroom apartment units consisting of 3 no. 1 bedroom triplex units (T1, T2, T3) in a 3-storey building, 4 no. 1 bedroom Maisonettes [Apartment Types P1 & P2] in 2 no. 2-storey buildings, (all with private open space); provision of single storey cycle parking; bin stores; and ESB substations, solar panels on roofs; as well as 238 no. surface car parking spaces;

¹¹ <https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de>

Ref:	Location	Description
	Balbriggan, Co. Dublin	C) Public Open Space of c. 1.34 hectares (Phase 3C -c. 0.38 ha), (with additional 0.48 hectares of incidental open space) as well as communal (c. 0.06 ha) and private open space; all associated landscaping and drainage works (including attenuation) with public lighting, planting and boundary treatments, including regrading/reprofiling of site where required; D) Provision of Class 1 Public Open Space (c. 0.65 hectares), with play equipment (accessed from Hamlet Lane) located to the west of Bremore Pastures and Hastings Lawn, south of Flemington Lane, [proposal includes alterations to part of the Class 1 public park and associated works approved under Reg. Ref. F15A/0550]; E) Provision of roads and services infrastructure (surface water, foul and water supply) to facilitate the development of the remainder of Phase 3 lands (Phases 3A, 3B & 3D) including public lighting, SuDS drainage and services infrastructure, as well as vehicular and pedestrian connections to the 'Boulevard Road' and all associated landscaping and ancillary site development works; F) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;
F22A/0526	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Cloghader & Flemington, Balbriggan, Co. Dublin	Development (on lands of c. 6.70 ha) relating to: 'Phase 3' to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Cloghader & Flemington, Balbriggan, Co. Dublin. (Phase 3 lands bounded generally by undeveloped lands to the north, undeveloped lands to the south, Boulevard Road to the east, and undeveloped lands to the west (to the rear of local road L1130). The proposal includes a separate site of Class 1 Public open Space of c. 0.65 hectares in the adjoining townland of Flemington to the north (accessed from Hamlet Lane, Bremore Pastures Drive, Balbriggan). The development will consist of Phase 3B as well as roads, services and public space relating to the overall Phase 3 Ladywell lands as follows: A) 95 no. dwellings comprising 79 no. 2-storey houses consisting of 20 no. 2 bedroom dwellings (House Types E1, E1A, E2, E4, E5, E6), 59 no. 3 bedroom dwellings (House Types D1, D1A, D2, D2A, F1, F1A, F2, F3, F4, F5, F6) all with associated private open space (in a mixture of semi-detached, terraced and detached units), 16 no. 1 bedroom Maisonettes (Apartment Types P1, P1A & P2, P2A), all with private open space; in 4 no. 2 storey building, single storey cycle parking; bin stores; and ESB substations, solar panels on roofs; as well as 305 no. surface car parking spaces; B) Public Open Space of c. 1.34 hectares, (with additional 0.48 hectares of incidental open space along riparian corridor) as well as communal and private open space; all associated landscaping and drainage works (including attenuation) with public lighting, planting and boundary treatments, including regrading/re-profiling of site where required; C) Provision of Class 1 Public Open Space (c. 0.65 hectares), with play equipment (accessed from Hamlet Lane) located to the west of Bremore Pastures and Hastings Lawn, south of Flemington Lane, (proposal includes alterations to part of the Class 1 public park and associated works approved under Reg. Ref. F15A/0550); D) Provision of roads and services infrastructure (surface water, foul and water supply) to facilitate the development of the remainder of Phase 3 lands (Phases 3A, 3C & 3D) including public lighting, SuDS drainage and services infrastructure, as well as vehicular and pedestrian connections to the "Boulevard Road" and all associated landscaping and ancillary site development works; E) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;
F21A/0055	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or	The development will consist of Phase 3A as well as roads, services and public space relating to the overall Phase 3 Ladywell Masterplan lands as follows: A) 99 no. dwellings comprising 73 no. 2-storey houses consisting of 24 no. 2 bedroom dwellings [House Types E1, E2, E3, E4], 44 no. 3 bedroom dwellings (House Types B1, B2, B3, D1, D3, F1, F2, F3, F4, F5) & 5 no. 4 bedroom dwellings [House Types M1 & M2]), all with private open

Ref:	Location	Description
	Folkstown Great, Cloghader & Flemington, Balbriggan, Co. Dublin	space; 16 no. duplex apartments (8 no. 2 bedroom [Types X1, X3] and 8 no. 3 bedroom units [Types X2, X4] in a 3 storey duplex building (including terraces at first floor level, single storey refuse storage building and cycle parking); 6 no. 1 bedroom 'triplex' apartments [Types T1, T2, T3] with balconies at first and second storey levels in 2 no. 3 storey buildings along with a single storey bicycle store & 4 no. 1 bedroom 'maisonette' apartments in 2 no 2 storey buildings (Types P1 & P2]) & bin stores as well as 172 no. car parking spaces; B) Public Open Space of c. 1 hectare, (with additional 0.27 hectares of open space along riparian corridor) as well as communal and private open space; all associated landscaping and drainage works (including attenuation) with public lighting, planting and boundary treatments, including regrading/re-profiling of site (and ditches) where required; C) Provision of Class 1 Public Open Space (c. 0.65 hectares), with play equipment (accessed from Hamlet Lane) located to the west of Bremore Pastures and Hastings Lawn, south of Flemington Lane, (proposal includes alterations to part of the Class 1 public park and associated works approved under Reg. Ref. F15A/0550); D) Provision of roads and services infrastructure (surface water, foul and water supply) to facilitate the future development of Phase 3 lands (Phases 3B-3D) including public lighting, Suds drainage and services infrastructure, as well as vehicular and pedestrian connections to the 'Boulevard Road' and all associated landscaping and ancillary site development works; E) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;
ABP 313210-22 SHD		On the 23rd of March 2023, ACP granted a 10-year permission to the Land Development Agency for development comprising inter alia the construction of 817 no. residential units (377 no. houses, 440 no. apartments), childcare facilities and associated site works, subject to 30 no. standard conditions.
FCC Planning Reg. Ref. F21A/0576 & ABP Ref: 312529-22	Castlelands, Balbriggan	An application for the Advance Infrastructure was submitted to FCC in October 2021 under FCC Reg. Ref. F21A/0576. A decision to grant permission was made by FCC 14th December 2021 and confirmed by ACP on the 8th of November 2022.
F24A.1069E ACP-322977-25	Stephenstown Industrial Estate	Demolition of existing 2 no. storey building on site (c. 1,070 sqm), the construction of a 2 no. storey discount retail store with off-licence use (c. 2,448 sqm gross floor area) c. 1,356 sqm net retail floor area.
An Coimisiún Pleanála - Case reference: PL06F.304673 Planning Authority Case Reference: F19A/0131	Balbriggan Community College, Pine Ridge, Chapel St., Balbriggan, Co. Dublin.	Demolition of existing school and construction of new 3 storey Post Primary School & single storey Special Education Needs Unit. Granted 20/09/2019
An Coimisiún Pleanála - Case reference: OA29N.319866	Located off the coast of Counties Dublin, Meath and Louth	Proposed development known as North Irish Sea Array ("NISA") Offshore Wind Farm.
An Coimisiún Pleanála - Case	Dublin City Centre and Drogheda, located in	DART + Coastal North Railway Order 2024 - Northern Line between Dublin City Centre and Drogheda including the Howth Branch. ACP Decision Make Railway Order with conditions. Date signed 19/08/2025.

Ref:	Location	Description
reference: NA29N.320164	counties Dublin, Meath and Louth	

As part of the assessment of the impact of the proposed development, account has also been taken of cumulative projects, i.e. developments that are currently permitted or under construction within the surrounding area, but whose environmental impact are not yet fully realised within the existing environmental baseline. Following a review of projects located in proximity to the proposed development it was determined that no significant projects are proposed or currently under construction that could potentially cause in combination effects on designated conservation sites.

Given this, it is considered that cumulative impacts with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no significant effects on designated conservation sites will be seen as a result of the proposed development alone or in combination with other projects.

An AA screening/NIS was also carried out for this development. It concluded that 'No projects in the vicinity of the proposed development would be seen to have a significant in combination effect on Natura 2000 sites.'

No significant effects are likely from cumulative impacts.

4.13 INTERACTIONS

The biodiversity elements of this EIAR have involved consultation with a wide section of the Project Team particularly in relation to the Construction Management, design, drainage, lighting and landscape elements of the proposed Project. There are numerous inter-related environmental topics described in detail throughout this EIAR document which are of relevance to the biodiversity chapter. The biodiversity chapter of the EIAR involves interactions with the Land, Soils, Geology & Hydrogeology; Water, Hydrology, Hydrogeology; Air Quality; Noise and Vibration; Material Assets – Traffic and Transportation; Material Assets - Waste. There is potential for interaction between the biodiversity and other chapters outlined in the EIAR, during construction and operation. The mitigation measures that will be put in place for the proposed development will ensure that the impact on biodiversity would be negligible following the implementation of mitigation measures.

4.14 DIFFICULTIES ENCOUNTERED IN COMPILING

No difficulties were encountered in relation to the preparation of the Biodiversity report. The surveys were undertaken within the optimal survey periods.

4.15 REFERENCES

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- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; http://ec.europa.eu/environment/nature/Natura2000management/docs/art6/guidance_art6_4_en.pdf
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5.0 LAND, SOILS, GEOLOGY & HYDROGEOLOGY

5.1 INTRODUCTION

This Chapter assesses and evaluates the potential impacts of the Proposed Development described in Chapter 2 (Description of the Proposed Development) on the land, soils, geological and hydrogeological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects. The impact on hydrology is addressed in Chapter 6 (Hydrology).

This Chapter has been written and prepared by Luke Maguire Environmental Consultant and Geoscientist (BSc) at AWN Consulting and Marcelo Allende (BSc, BEng) is a Principal Environmental Consultant (Hydrologist) at AWN Consulting.

Luke Maguire; is an Environmental Consultant at AWN with over 4 years of experience in Environmental Consulting and water resources. Luke holds a B.Sc. in Geoscience from Trinity College University of Dublin and has worked on a range of developments including pharmaceutical plants, medical device facilities, ICT facilities and energy projects. Luke has experience in contaminated soil sampling and analysis, basement impact assessments, bulk excavations and largescale dewatering processes. Additionally, Luke has gained experience in Environmental Impact Assessment (EIAR), Due Diligence Reporting, Hydrological and Hydrogeological Risk Assessment, Flood Risk Assessment and WFD Assessment Reporting and has worked in multiple Environmental monitoring disciplines such as Chemical Wastewater (Intel), Ground Gas, Surface Water, and Groundwater Monitoring at numerous sites across Dublin.

Marcelo Allende is a Principal Environmental Consultant (Hydrologist) with AWN Consulting with over 20 years of experience in water resources technical studies, conceptual and numerical hydrological/hydrogeological modelling and environmental consultancy. Marcelo holds a degree in Water Resource Civil Engineering (BEng, Hons) from the University of Chile and a Bachelor of Science in Engineering (BSc, Hons). He has worked on a wide of range of projects including multi-aspect environmental investigations, geo-environmental impact assessments, surface and groundwater resource management, hydrological and hydrogeological conceptual and numerical modelling, strategic and site specific flood risk assessments (Stage 1,2 and 3), Due Diligence reporting, baselines studies, soils, surface water and groundwater monitoring and field sampling programmes on a variety of brownfield and greenfield sites throughout Ireland as well as overseas in Chile, Argentina, Peru and Panama. He also has detailed knowledge of environmental guidance, legislation, regulations & standards and expertise in GIS (expert level) and MATTE studies at COMAH establishments. He is currently a member of the International Association of Hydrogeologists (IAH, Irish Group) and a member of Engineers Ireland (MIEI).

5.2 METHOD

5.2.1 CRITERIA FOR RATING EFFECTS

The Chapter has been prepared in accordance with European Commission's guidelines, *Guidance on the preparation of the Environmental Impact Assessment Report* (2017), the EPA *Guidelines on the information to be contained in EIAR* (2022) and the EU Commissions *Notice on changes and extensions to projects* (2021).

The assessment follows the procedures set out in the Institute of Geologists of Ireland (IGI) Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements (2013) and other relevant guidelines set out below to assess and evaluates land, soils and geology within the context of the Proposed Development. This assessment includes a review of the existing environment, the potential impacts of the Proposed Development, mitigation measures, and the potential impacts.

The appraisal methodology for the EIAR is completed in accordance with 'Guidelines on the Information to be contained in Environmental Impact Statements' (EPA, 2022) and Institute of Geologists of Ireland (IGI) 'Geology in Environmental Impact Statements, a Guide', (IGI, 2002) and 'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements' (IGI 2013). In addition, 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the Transport Infrastructure Ireland (TII, 2009) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental impacts on the land, soils and geological environment is based on the quality, significance, duration, and type of impact characteristic identified. In this EIA assessment, consideration is given to both the importance of an attribute and the magnitude of the potential environmental impacts of the proposed activities on that cited attribute. The EIAR guideline tables (EPA, 2022) the IGI and TII criteria for rating the magnitude and significance of impacts at EIA stage on the geological related attributes are also relevant in determining impact assessment.

The Transport Infrastructure Ireland (TII) (formerly National Roads Authority) criteria is used for estimating the importance of the soil, geology and hydrogeological attribute the magnitude of the potential environmental impacts on the land, soil, geological and hydrogeological environment is based on the TII matrix, and the quality, significance and duration of potential impacts are described in this chapter

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

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

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

- Geological heritage sites in the vicinity of the perimeter of the subject site;
- Landfills & industrial sites & graveyards in the vicinity of the site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;
- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- The extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery;
- High-yielding water supply springs/wells in the vicinity of the site to within a 2 km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important etc.) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the proposed development associated with aspects of the development for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological/karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

5.2.2 SOURCES OF INFORMATION

Desk-based geological information on the substrata (both Quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1: 100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register; and
- Fingal County Council - illegal landfill information.
- Fingal Development Plan 2023-2029.

Site specific data was derived from the following sources:

- The proposed development design site plans and drawings; and Consultation with the project design engineers.
- Civil Engineering Pre-Planning Briefing Note, Paul McGrail Consulting Engineers, 2025.
- Site Investigation Report. Proposed New Housing development Naul Road Balbriggan IGSL Ltd (2019).
- EPA (2025). EPA Maps.
- GSI (2025). GSI Map Viewer.

5.2.3 RELEVANT LEGISLATION & GUIDANCE

The baseline study and impact assessment have will be out in accordance with the following key guidance and established best practice:

- Environmental Protection Agency (EPA) Advice notes on current practice in the preparation of Environmental Impact Statement (EPA, 2003) and Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2022a).
- TII/National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Transport Infrastructure Ireland - Road Drainage and Water Environment (TII, 2015).
- Institute of Geologists Ireland (IGI) -Geology in Environmental Impact Statements, a guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW).

Land soil, geology and hydrogeology resource management in Ireland is dealt with in the following key pieces of legislation and guidelines:

- Institute of Geologists Ireland (IGI) -Geology in Environmental Impact Statements, a guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- Waste Management Acts 1996 as amended.
- Environment Agency (EA), Land contamination: risk assessment (EA 2020).
- BS 10175:2011 + A2:2017 Investigation of potentially contaminated sites. Code of practice (British Standards Institute 2017).

- CIRIA C552 Contaminated Land Risk Assessment: A Guide to Good Practice (CIRIA 2001).
- TII/National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Transport Infrastructure Ireland, The Management of Waste from National Road Construction Projects (TII 2017).
- Environmental Protection Agency, Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 2013).
- Local Authority planning guidance as applicable.
- Consolidated EIA Directive 2011/92/EU as amended by 2014/52/EU.
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001).
- Water Framework Directive (WFD) - Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy. This relates to the improvement of water quality across Ireland including rivers and groundwater bodies.
- River Basin Management Plan 2018-2021 (including regional plans by Local Authority Waters Programme (Waters and Communities 2020)).
- River Basin Management Plan 2022-2027.
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9/2010, as amended.
- European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016, S.I. No. 366/2016.
- Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (Groundwater Directive).
- European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019.

5.3 BASELINE (RECEIVING) ENVIRONMENT

The receiving environment is discussed in terms of; land geology, soils, hydrogeology, and site history including potential for contamination.

The development will consist of the construction of 815 no. dwellings, open space, ancillary infrastructure, community/retail floorspace and 2 no. creches on an overall combined site area of 24.91 hectares and on multiple portions of separate parcels of land characterized currently by an agricultural function located at Flemington Lane in Balbriggan, North Co. Dublin.

The development site is a greenfield site located approximately 1.6 km west of the Balbriggan town centre. The subject development is partially bounded by the Clonard Road (regional Route R122) and Bridgefoot and adjacent agricultural lands to the south and west, respectively. The site is bounded by Flemington Lane and agricultural lands to the north and by Taylor Hill Grange Residential Estate, among other adjacent / neighbouring residential housing estates to the east.

Figure 5.1: Site Location

5.3.1 TOPOGRAPHY AND SETTING

The topography is relatively consistent with the site generally falling in elevation from northeast to southwest and characterized by minor localized undulations. The elevation falls from approximately 47m AOD (Above Ordnance Datum) to approximately 42m AOD from northeast to southwest. A portion of the central western section of the site located adjacent to the Clonard Road lies on elevated land at approximately 66m AOD.

5.3.2 AREAS OF GEOLOGICAL INTEREST, HISTORIC & CURRENT LAND-USE

Full details of the site history and previous land are provided in Chapter 14 Cultural Heritage, Archaeology & Architectural Heritage of the EIAR. This section includes an evaluation of the likelihood of the presence of any contamination on soil/ groundwater at the site and an overview of the site development history.

The site is currently a greenfield site characterised with an agricultural function. The vicinity and surrounding context of the site is predominantly characterized by a residential land and agricultural function, coupled with a combination of commercial, recreational, educational / institutional and amenity uses.

Historical Ordnance Survey maps were examined for the purpose of this report to identify any historical sources of contamination. O.S maps are available for the year 1829 - 1842, i.e. historical 6" maps and for 1883 - 1913, i.e. historical 25" map. Furthermore, there are available historic Satellite Aerial Imagery maps from 1995, 1996 - 2000, 2005 - 2012, 2011 - 2013, and 2013 - 2018. The assessment of site history (OSI, 2025) confirms that the Site has been in agricultural use since the earliest mapping available (1829-1842).

A review of historical aerial satellite imagery spanning from the period 1995 to 2018 indicates that the development of residential land in the vicinity of the site to the east commenced around 2001.

According to the EPA website, the nearest licenced facility in the vicinity of the site is Padraig Thornton Waste Disposal Limited (IEL facility active licence number P1014-01), which is located circa 1.4 km southeast, thereby hydrogeologically cross gradient of the proposed development. The IPC Industry (IPPC) site in closest proximity to the development is the Brooks Group Limited Licenced facility (Active License No: P0780-01), which is located approximately 3.9 km south of the subject development site.

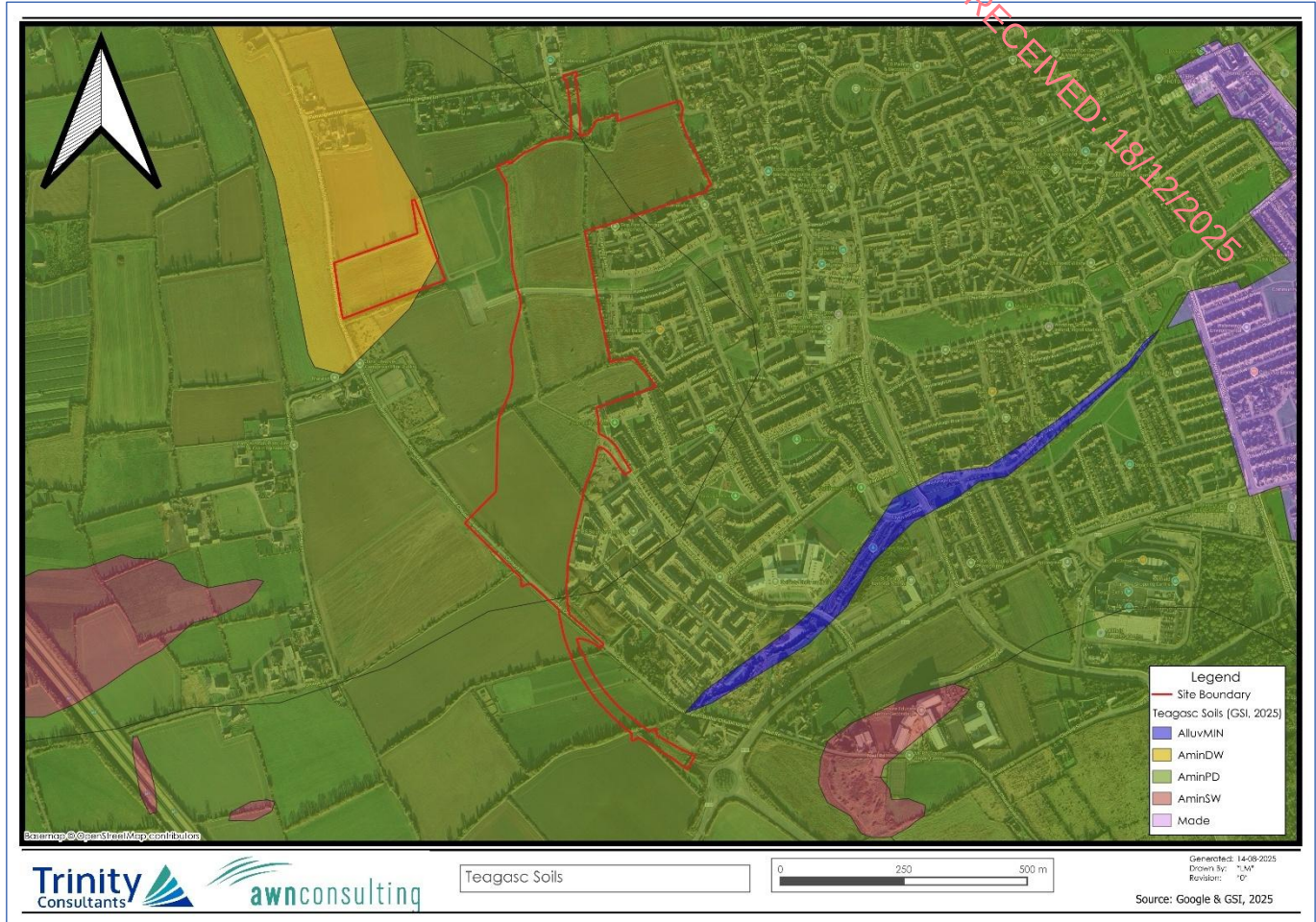
Review of the GSI online data base confirmed that no geological heritage site has been identified in the vicinity of the proposed development site. The closest County Geological Site is Laytown to Gormanstown Coastal Plain, including sea cliffs, which is located c. 1.4 km north-northwest of the site at the point of closest proximity.

5.3.3 SOIL AND QUATERNARY SUBSOIL

The GSI/Teagasc (2025) mapping currently denotes the primary soil type underlying the site as Irish Sea Till (IrSTLPSsS) which is derived from parent material described as Sandstone and shale till (Lower Palaeozoic) with matrix of Irish Sea Basin origin. These deposits are classified as AminPD - Mineral poorly drained (Mainly acidic) soils.

The western portion of the site which is removed / separated from the majority of the subject development lands, is underlain by AminDW which is defined by the GSI as Acid Mineral Soil Deep Well Drained soil, derived from acidic parent material.

Figure 5.2: Teagasc Soils (GSI, 2025)



The regional overburden deposits are reflective of the Quaternary geological period that extends from around 1.5 million years ago to the present day. This can be further sub-divided into the Pleistocene Epoch, which covers the Ice Age period, and which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day.

The GSI (2025) mapping database of the Quaternary Sediments / Subsoils in the vicinity of the site indicates one (1) no. principal subsoil type. The predominant subsoil type present across the site is '*Till derived from Lower Palaeozoic sandstones and shales (TLPSSs)*'. This till is made up of glacial CLAYs which form a cohesive, low permeability subsoil. According to the GSI (2025) the western portion of the site which is removed / separated from the majority area of the site is partially underlain by a localised zone of '*Bedrock outcrop or near surface subcrop*'.

The secondary quaternary subsoil types present within the wider context / region of the subject site include:

- Gravels derived from Lower Palaeozoic sandstones and shales (GLPSSs) underlying the lands to the south of the development; and
- Irish Sea Till derived from Lower Palaeozoic sandstones and shales (IrSTLPSSs) is indicated underlying surrounding lands in the vicinity / region of the site to the northeast and southwest. The GSI (2025) indicates that a minor portion sites southern parts are underlain by these deposits.
- Localised area of Lacustrine Sediment (deposits found at the bottom of lakes/ponds and other standing bodies of water) occur in irregular zones dispersed throughout the surrounding lands, the nearest located c. 75m to the northeast of the site (at Flemington Lane) at the point of closest proximity.

- Lands to the southeast of the site are partially underlain by localized near-linear strip of Alluvium deposits (undifferentiated), which lines the banks of and corresponding to the deposits of the Clonard Brook Stream (EPA Name: CLONARD or FOLKSTOWN GREAT) which flows in a northeast-east direction traversing the lands to the south-southeast of the site. These deposits are located c. 65m to the east of the site (adjacent to Clonard road) at the point of closest proximity. These alluvium deposits are generally granular and characterised by a higher permeability than the predominant subsoils which occupy the region / surrounding lands.

Figure 5.3: Quaternary Sediments / Subsoils (GSI, 2025)



The sequence of subsoils deposits recorded during the site investigation conducted by IGSL (2019) are summarised as follows:

- Ground Conditions included topsoil with some soft sandy Clay extends to depths between 0.2m and 0.5m BGL (Below Ground Level). Cohesive deposits described as firm brown sandy gravelly CLAY were generally encountered across / throughout the site underlying the topsoil and extends/continues to depths ranging from 1.0m to 2.3m BGL. Granular deposits include a thin band of angular gravel which was encountered at the base of BH04A, extending from 2.0m to 2.5m BGL. Rig and excavator refusal in several boreholes and trial pits has indicated the presence of relatively shallow weathered Limestone Bedrock. Rock horizon has been noted at average depths between 1.0m-3.0m BGL.
- The Stratum then increases to stiff consistency and boreholes continued to a final refusal depth ranging from 2.5m to 4.9m BGL. Of the 4 NO. Boreholes drilled, Borehole refusal was recorded at shallow depths in several locations (BH01-BH04). According to IGSL (2019), final refusal depths

should not be taken as indicative of bedrock horizon. Proof core drilling to confirm depth to bedrock (bedrock parameters) was not scheduled for this project.

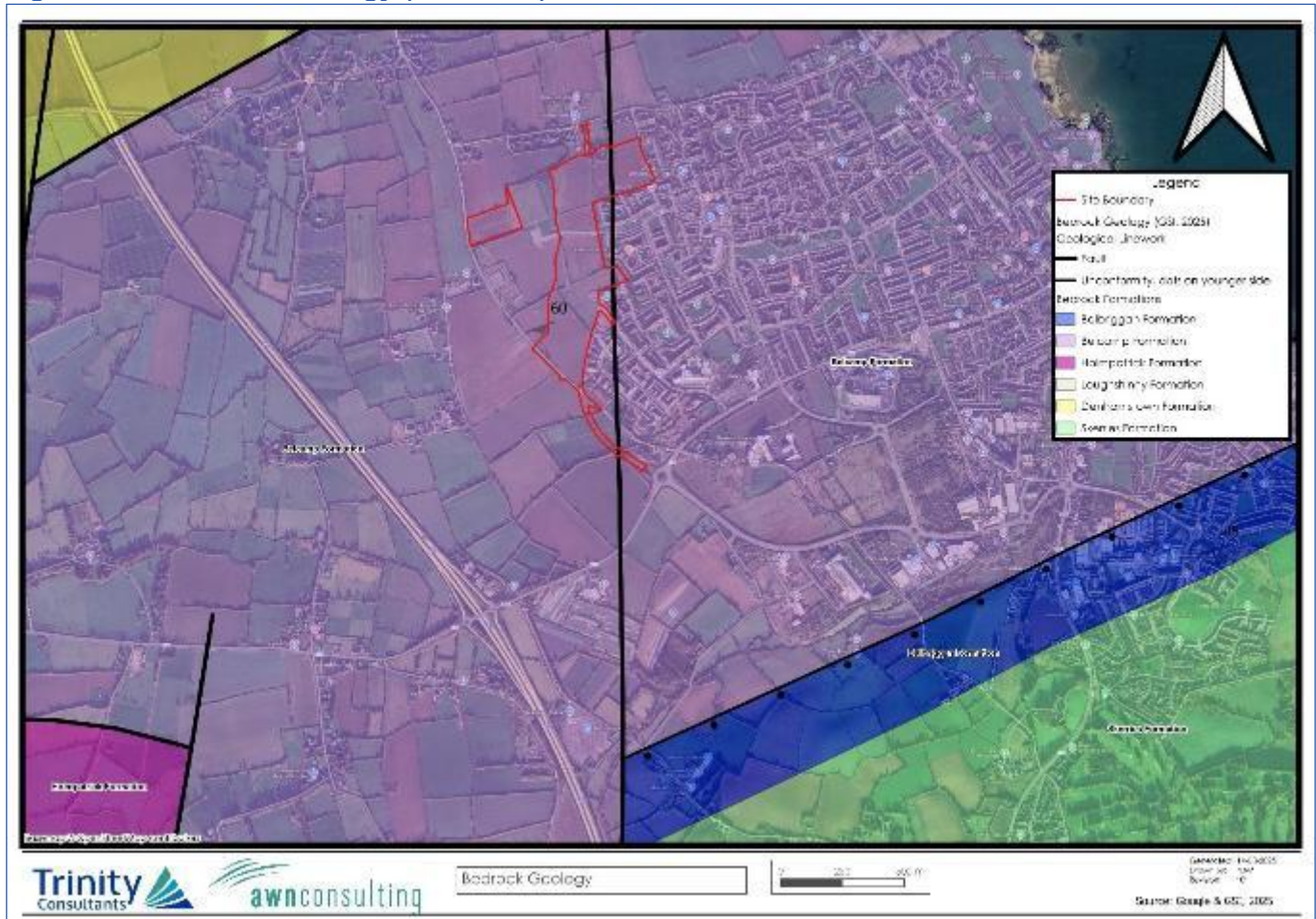
5.3.4 REGIONAL GEOLOGY

Inspection of the available GSI mapping (GSI, 2025) shows that the bedrock geology underlying the site belongs to one formation: BECP – Belcamp Formation consisting of 'Andesite, pillow breccia, mudstone, tuff'. This volcanic (partial) formation is described as Basalt to andesite sheets, pillow breccias and hyaloclastite, tuffs and mudstones. A lower mudstone and tuff-dominant Lowther Lodge Member and an upper pillow breccia and andesite dominant Bremore Member.

During the site Investigation undertaken by IGSL in 2019 onsite, boreholes and trial pits has indicated the presence of relatively shallow weathered Limestone Bedrock, which is not consistent with the Belcamp formation lithology.

In terms of the structural geology of the area, the GSI database shows a structural fault traversing the eastern portion of the southern, central and northern sections of the site. This fault trends in a North-South direction / orientation.

Figure 5.4: Bedrock Geology (GSI, 2025)



5.3.5 HYDROGEOLOGY

5.3.5.1 Description of Water Body

Aquifers are generally classified as rocks or other matrices that contain sufficient void spaces, and which are permeable enough to allow water to flow through them in significant quantities. The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km²), well yield (m³/d), specific capacity (m³/d/m) and groundwater transmissivity (mm³/d).

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km²), well yield (m³/d), specific capacity (m³/d/m) and groundwater throughput (mm³/d). There are three main classifications: regionally important, locally important, and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (LI). Similarly, poor aquifers are classed as either generally unproductive except for local zones (PI) or generally unproductive (Pu).

The GSI (2025) classifies the principal aquifer types in Ireland as:

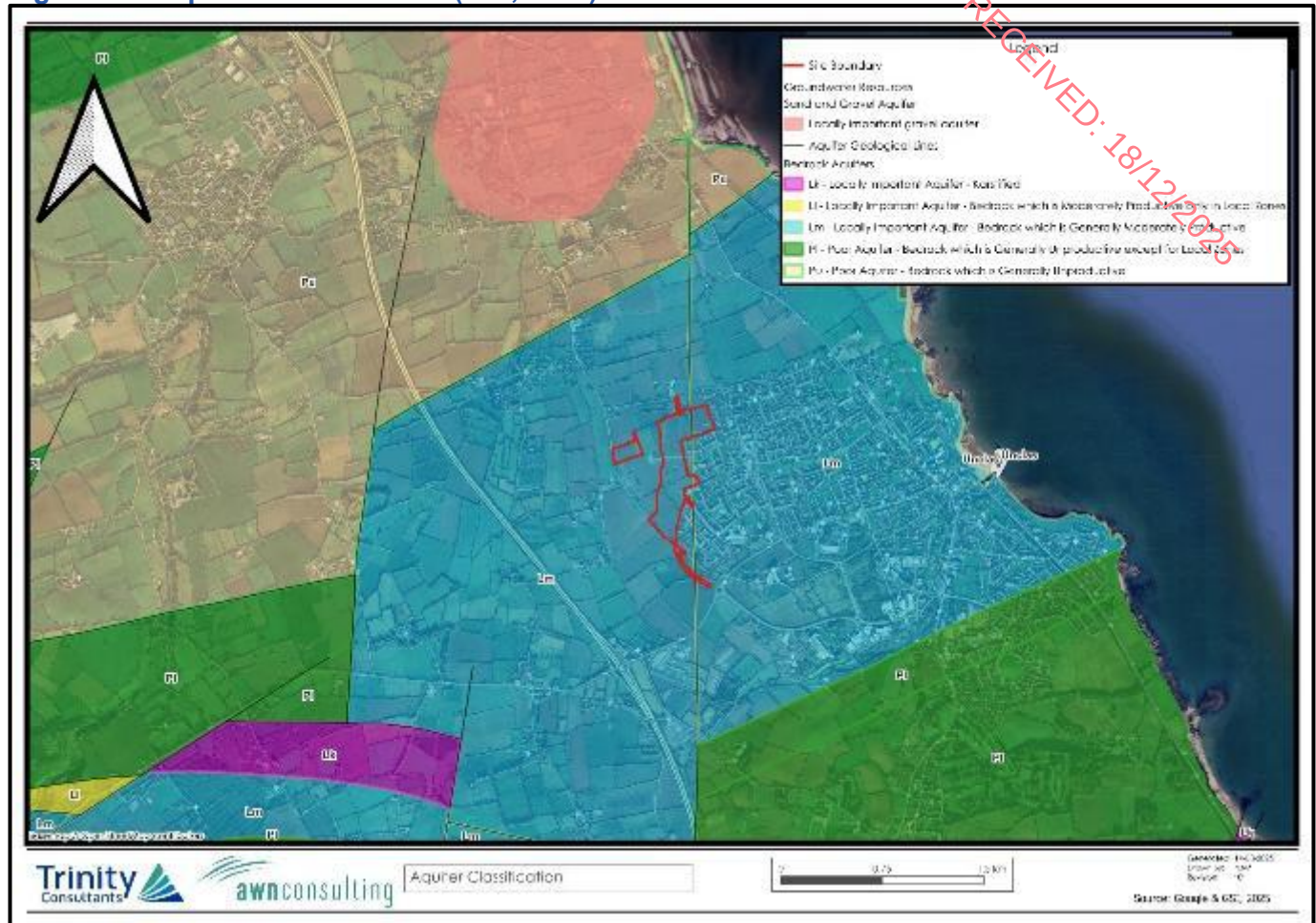
Bedrock Aquifer:

- Rkc – Regionally Important Aquifer – Karstified (conduit)
- Rkd – Regionally Important Aquifer – Karstified (diffuse)
- RK – Regionally Important Aquifer – Karstified
- Rf – Regionally Important Aquifer – Fissured bedrock
- Lm – Locally Important Aquifer – Bedrock which is Generally Moderately Productive
- Lk – Locally Important Aquifer – Karstified
- LI – Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones
- PI – Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones
- PU – Poor Aquifer – Bedrock which is Generally Unproductive

Gravel Aquifer:

- Lg - Locally Important Aquifer - Sand & Gravel
- Rg - Regionally Important Aquifer - Sand & Gravel

The bedrock aquifer underlying the site according to the GSI (www.gsi.ie/mapping) National Bedrock Aquifer Map is classified as (LM) *Locally Important Aquifer - Bedrock which is Generally Moderately Productive in local zones*. The site is not underlain by any gravel aquifers. Figure 5.5 below presents the current bedrock aquifer map for the area surrounding the Site.

Figure 5.5: Aquifer Classification (GSI, 2025)

The site is underlain by the Balbriggan Groundwater Body (EU code: IE_EA_G_039). Based on the most recent data (www.epa.ie) the Balbriggan GWB for which the Proposed Development is located entirely within, has a WFD status of “Good” (2016-2021) and has obtained a WFD risk score (3rd-cycle) of “Not At Risk”. This indicates very poor connectivity within any fractures in the underlying bedrock and as such no likely off-site pathway within the bedrock aquifer.

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

The GSI currently classifies the aquifer vulnerability within the subject site as a mixture of *Extreme (E)*, *High (H)*, *Moderate (M)*, and *Low* based on GSI (2025) data (refer to Figure 5-6 below).

During the site Investigation undertaken by IGSL in 2019 onsite, rig and excavator refusal in several boreholes and trial pits has indicated the presence of relatively shallow weathered Limestone Bedrock. Rock horizon has been noted at average depths between 1.0m-3.0m BGL. Final refusal depths ranging from 2.5m to 4.9m BGL suggesting a *High* groundwater vulnerability, as guidelines presented in Table 5-2 below. According to IGSL (2019), final refusal depths should not be taken as indicative of bedrock horizon. Proof core drilling to confirm depth to bedrock (bedrock parameters) was not scheduled for this project.

Table 5.1: Vulnerability Mapping Guidelines

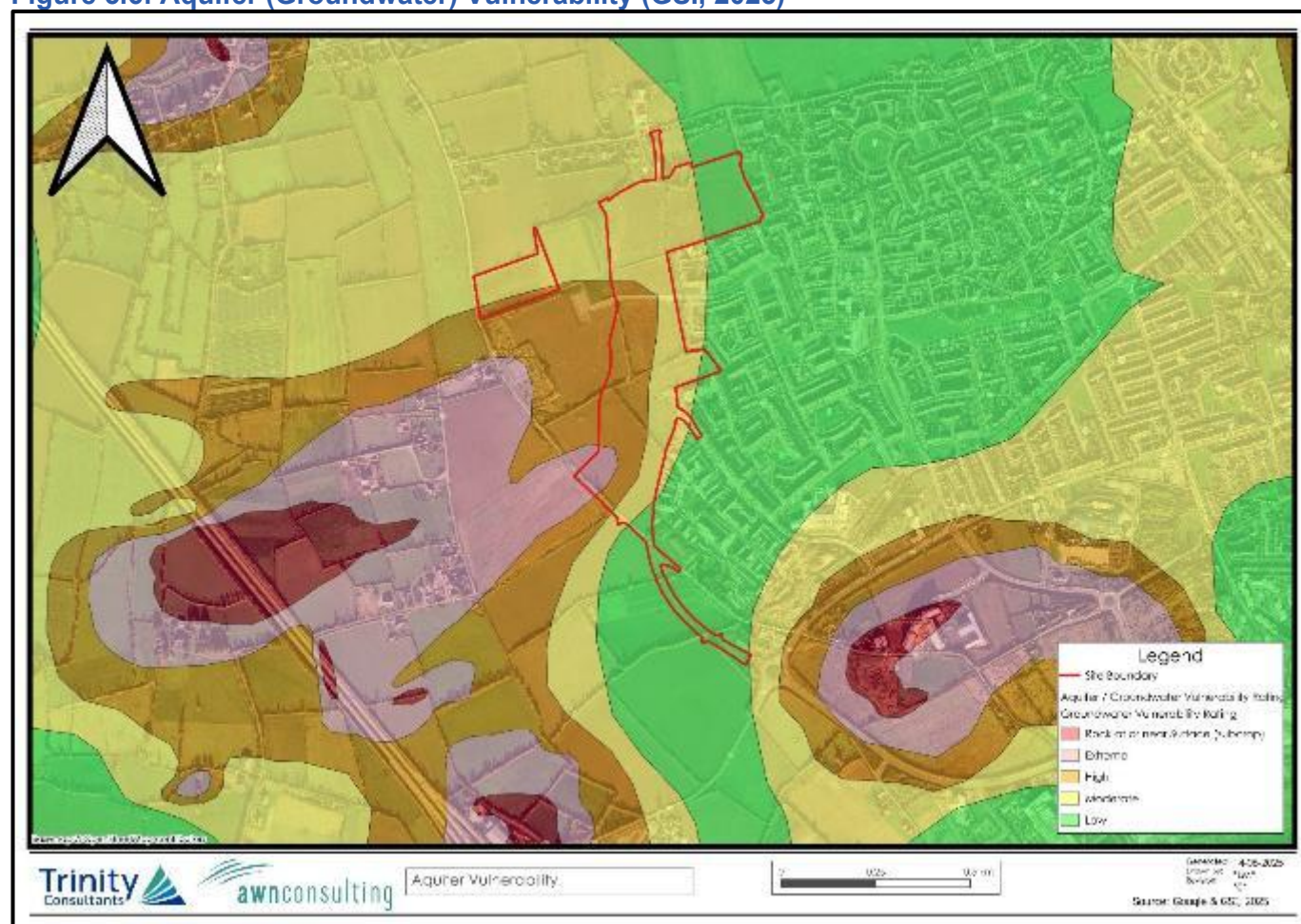
Vulnerability Rating	Hydrogeological Condition				
	Subsoil Permeability (type) and Thickness			Unsaturated Zone	Karst Features
	High Permeability (sand/gravel)	Moderate Permeability (e.g. sandy subsoil)	Low Permeability (e.g. clayey subsoil, clay, peat)	(Sand/ gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3 m	0 - 3 m	0 - 3 m	0 - 3 m	-
High (H)	> 3 m	3 - 10 m	3 - 5 m	> 3 m	n/a
Moderate (M)	n/a	> 10 m	5 - 10 m	n/a	n/a
Low (L)	n/a	n/a	> 10 m	n/a	n/a

Notes: (1) n/a: Not applicable

(2) Precise permeability values cannot be given at present

(2) Release point of contaminants is assumed to be 1-2 below ground surface

Figure 5.6: Aquifer (Groundwater) Vulnerability (GSI, 2025)



5.3.5.2 Groundwater Wells and Flow Direction

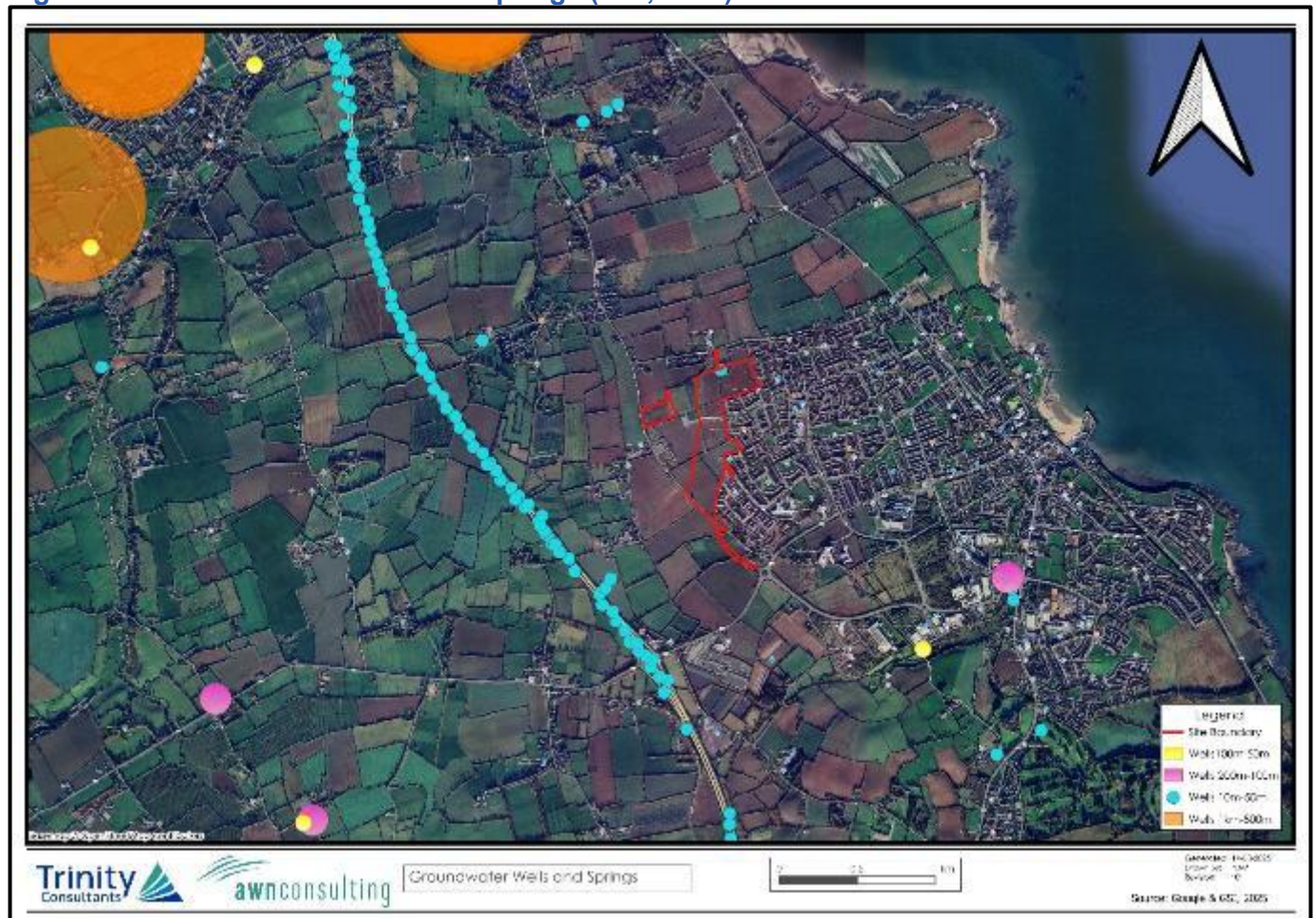
The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. There are no source protection areas / Zones (SPZs, which are zones defined by the GSI within which development is limited in order to protect groundwater from potential pollution) or recorded groundwater resource protection zones in the immediate area of the proposed site, i.e., zones surrounding a groundwater abstraction area. The Public Supply Source Protection Area in closest proximity to the proposed development site is BOG OF THE RING PWS which is located approximately 2.2 km southwest of the site.

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive. This current index shows one Well / Spring (GSI Name: 2925NEW089) within the site. This Spring is known as 'Lady Well', is indicated to be located in the Flemington townland within the northern portion of the site (adjacent to the northern boundary, location accuracy to 20m) and was drilled in 1899 to an unknown depth.

Several wells occupy the wider region. Multiple boreholes with a good yield and used for industrial use are located in the Balbriggan region to the east of the site. The balance of the boreholes to the west and southwest are characterized by a public supply function / use. There is no risk to these water supplies from the site.

None of the wells listed in the vicinity are categorised as domestic use. The area is serviced by Local Authority / public mains therefore it is unlikely that any wells are used for potable supply.

Figure 5.7: Groundwater Wells and Springs (GSI, 2025)



The flow paths and key characteristics within the Balbriggan GWB are described as follows (GSI, 2025):

- *'The majority of groundwater flow in this area is considered to take place in the upper weathered zone of the aquifer. Groundwater will flow from the recharge mounds in the center of the body towards the coast and also to adjacent GWBs. Flow paths are not considered to extend further than the nearest surface water feature and will generally not be greater than 500 m. There is evidence of confined groundwater flow in the southern area of the GWB, at Stephenstown, where standing water levels in the rock rise above the top of the bedrock into the thick till that overlies this area.'*
- *'The drainage density is quite low in the centre of this body, which suggests that in this area, which is elevated and has thinner subsoil (as indicated by the location of outcrops in the area) there is a higher rate of recharge and little runoff. Away from this central high there is evidence to suggest that the subsoil thickness increases and there is the emergence of surface channels. The GWB is mostly surrounded by Lower Paleozoic rocks, which are of lower permeability and will act as a barrier to groundwater flow. Hence this may cause groundwater to be forced to the surface along this geological boundary, facilitating the development of surface water streams along this boundary.'*
- *'This GWB is located in northern county Dublin around Balbriggan. The topography of the area slopes towards the coast with some small hills contained within the GWB, which act as sub-catchment level drainage divides. The GWB is composed primarily of moderate permeability rocks, with localized zones of enhanced permeability. The extent of the GWB is defined by the location of the volcanic rocks around Balbriggan. The small areas of volcanic rocks may have a higher permeability. Recharge occurs diffusely through the subsoils and via outcrops. The aquifers within the GWB are generally unconfined, but they may be locally confined where the subsoil is thicker and/or less permeable. Most flow in this aquifer will occur in a zone near the surface. In general, majority of groundwater flow occurs in the upper 30 m, comprising a weathered zone of a few metres and a connected fractured zone below this. However, deep-water strikes in more isolated faults/ fractures can be encountered. Flow path lengths are relatively short, and in general are between 30 and 300 m. Groundwater discharges to the numerous small streams crossing the aquifer and also directly to the coast.'*

Regional groundwater flow would most likely be in line with local topography to the east towards the Balbriggan coastline and Irish Sea. The flow direction in the overburden generally follows no fixed pattern or trend.

These aquifer types are characterised by discrete local fracturing with little connectivity rather than large, connected fractures which are more indicative of Regional Aquifers. As such, flow paths are generally local to short distances. Therefore, given the local flow paths (<500m) and little connectivity, there is no hydrogeological connection/linkage to the Natura 2000/conservation/protection areas located at the Northwest Irish Sea SPA, located c. 1.7km east of the development at the point of closest proximity.

The flow direction in the overburden generally follows no fixed pattern or trend. Flows of this nature are typical of low permeability clay strata with intermittent fill areas, where often the water level measures represent pore water seepages into the overburden monitoring well (opposed to bedrock wells) or perched groundwater conditions (not bedrock aquifer water). The clay is not considered to be a contamination pathway based on the discontinuous perched/pore water table meaning there is no continuous connectivity of shallow groundwater.

Groundwater baseflow is likely to be in continuity with the Clonard Brook Stream which represents the most significant hydrological feature in the region of the site, running / flowing through the lands bounding the site to the south and given this the inferred groundwater flow direction is likely to be towards the east.

- Waste Acceptance Criteria (WAC) for inert waste landfills in accordance with the 2002 European Landfill Directive (2002/33/EC).

This suite of parameters includes the following:

- Mineral oil;
- Polycyclic aromatic hydrocarbons (PAHs);
- Polychlorinated biphenyls (PCBs);
- BTEX compounds (benzene, toluene, ethylbenzene, and xylenes);
- and methyl tert-butyl ether (MTBE);
- Total organic carbon (TOC);
- Leachable component of a range of organic and inorganic parameters.

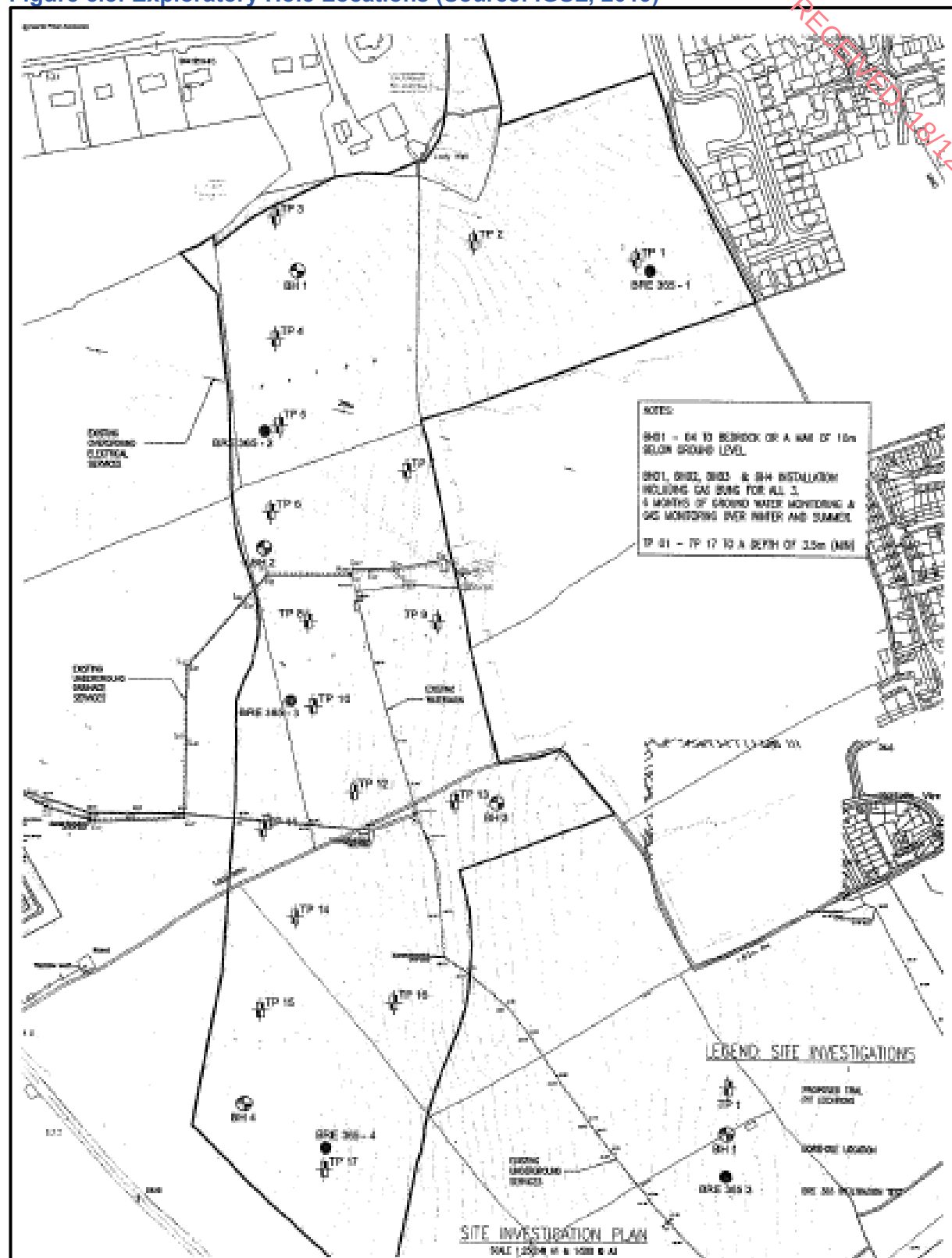
Soil sample analysis results are presented in the IGSL Site Investigation Report (2019), included in this application and are summarized as follows:

- The results / data obtained confirms that all soil samples tested were classified as Inert (clean). No elevated contamination levels were identified. It is subsequently concluded that excavated material can be safely reused within the site boundary or alternatively disposed of to a suitably licensed landfill facility.
- No asbestos traces were detected during the screening of submitted soil samples.
- No elevated Sulphate concentrations were detected. Sulphate content was consistently less than 0.01 g/l and pH values ranged from 6.5 to 7.9 in all 10No. soil samples tested.
- No elevated Chloride concentrations were detected. Chloride content was established for 5No. samples with concentrations all less than 0.01 g/l.
- Additionally, tests on weathered bedrock was conducted by Nicholls-Colton in the UK to establish Sulphate concentration. Of the 5No. samples tested, results confirm very low Sulphate levels and no indication of possible Pyrite presence in the bedrock was identified.

The location of exploratory holes (Trial Pits, TP & Boreholes, BH) as part of the intrusive Site Investigation are depicted in figure 5.8 below.

RECEIVED: 18/12/2025

Figure 5.8: Exploratory Hole Locations (Source: IGSL, 2019)



5.3.5.4 Groundwater Quality

The European Communities Directive 2000/60/EC established a framework for community action in the field of water policy (commonly known as the Water Framework Directive [WFD]). The WFD required 'Good Water Status' for all European water by 2027, to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'.

The Groundwater Body (GWB) underlying the site is the Balbriggan GWB (EU Groundwater Body Code: IE_EA_G_039). Currently, the EPA (2025) classifies the Balbriggan GWB as having 'Good Status', as per both the previous WFD cycle (2016-2021) and latest WFD cycle (2019-2024). Presently, the groundwater body in the region of the site (Dublin GWB) is classified as being 'Not at risk' per the WFD Risk Score system which determines that the GWB has achieved its objectives. This classification is attributed to the GWB achieving 'Good' quantitative groundwater status as well as chemical groundwater status.

No groundwater sampling or groundwater chemical / environmental analysis was undertaken during the site investigation conducted by IGSL (2019) on the lands of the development.

Hydrogeological Features

According to the GSI Karst database there is no evidence of karstification (bedrock prone to dissolution leading to underground drainage systems such as caves and large crevices) in this area.

5.3.5.5 Areas of Conservation

There are no Special Protection Areas, candidate Special Areas of Conservation or proposed Natural Heritage Areas within or immediately adjacent to the facility. The nearest site designated for nature conservation is the North-West Irish Sea SPA (Site Code 004236), which is located approximately 1.7 km to the east. As such, there are no groundwater dependent wetlands within the zone of influence (or downstream) of the proposed development.

As previously mentioned (refer to section 5.3.5.2), the local flow paths (<500m) and little connectivity which are characteristic of this locally important aquifer classification, indicate there is no hydrogeological connection/linkage to the Natura 2000/conservation/protection areas located at the Northwest Irish Sea SPA, located c. 1.7km east of the development at the point of closest proximity.

Figure 5.9: Designated Areas (Natura 2000 Conservation / Protection Sites)

5.3.6 RADON

According to the EPA (now incorporating the Radiological Protection Institute of Ireland) the site location is in a Radon Zone Area where it is estimated that more than twenty per cent of the homes in this 10km grid square are estimated to be above the Reference Level, thereby indicative of a High Radon Area (source: pre-May 2022 Radon Map). The Radon risk map indicates that About 1 in 20 homes in this area is likely to have high radon levels in this area.

5.3.7 GEOHAZARDS

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage, and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff and leads to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. There have been no recorded landslide events at the site. The GSI landslide database was consulted and the nearest landslide to the Proposed Development was approximately 18.5 km to the northwest, referred to as a rotational slide within sandstone and shale till (Lower Palaeozoic) (GSI_LS12_0335). The date of this landslide event is unknown. Due to the local topography and the underlying strata, there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by the Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland operated by DIAS. The seismic data from the stations comes into DIAS in real-time and is studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish Sea (1.0 – 2.0 Ml magnitude) and ~50 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity to the proposed development site.

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

5.3.8 LAND TAKE

There will be a loss of land available for greenfield/agricultural use due to the development. However, the area of development is relatively small in the context of agricultural land available in the overall region. This change of land use has already been established for the permitted zone of residential development.

5.3.9 CONCEPTUAL SITE MODEL

Based on the regional and site-specific information available a Conceptual Site Model has been prepared.

The local CSM cross-sections for the Site are presented below as **Figure 5.10** (A-A': north to south). This figure presents the location of representative cross sections through the site to show the local Land, Soil, Geological and hydrogeology conceptual site model (CSM) which is as follows:

- The topography is relatively consistent with the site generally falling in elevation from northeast to south-west and characterized by minor localized undulations. The elevation falls from approximately 47m AOD (Above Ordnance Datum) to approximately 42m AOD from northeast to southwest. A portion of the central western section of the site located adjacent to the Clonard Road lies on elevated land at approximately 66m AOD.
- The proposed development site has been greenfield/agricultural use historically. There is no evidence of any historical waste disposal or source of contamination. WAC testing has confirmed that the soil can be considered "inert" for disposal purposes and all soil samples analysed were suitable for residential development.

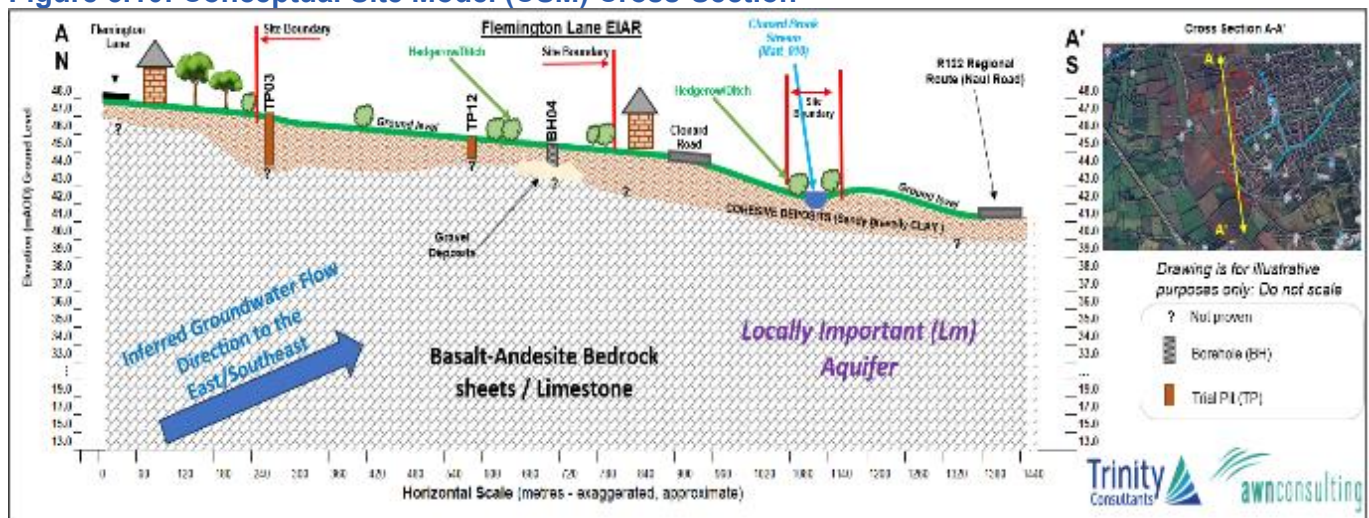
The profile on site is relatively consistent and comprises:

- Soil Type: The predominant subsoil type present across the site is 'Till derived from Lower Palaeozoic sandstones and shales (TLPSsS)' (GSI, 2025).
- Underlain by Bedrock: 'Andesite, pillow breccia, mudstone, tuff' which is considered a (LM) Locally Important Aquifer - Bedrock which is Generally Moderately Productive in local zones. Weathered Limestone noted at TP and BH refusal (IGSL, 2019).
- Rig and excavator refusal in several boreholes and trial pits has indicated the presence of relatively shallow weathered Limestone Bedrock. Rock horizon has been noted at average depths between 1.0m-3.0m BGL. The Stratum then increases to stiff consistency and boreholes continued to a final refusal depth ranging from 2.5m to 4.9m BGL (IGSL, 2019)
- Review of the geology and hydrogeology in the surrounding region indicates that there are no sensitive receptors such as groundwater-fed wetlands, significant public water supplies / Source Protection Zones / Council Group Water Schemes or geological heritage sites within the immediate vicinity which could be impacted by the proposed development.
- The inferred groundwater flow direction is east towards the Irish Sea;
- There are no groundwater-dependent terrestrial ecosystems which have the potential to be impacted by the proposed development. The underlying aquifer is characterised by discrete discontinuous fracturing with short flow paths (less than 500m) and, as such, this

combined/coupled with the natural protection (from vertical migration to aquifer) provided by the low permeability clay/tills there is no likely potential for a groundwater (hydrogeological) source-pathway linkage or no potential impact during construction or operation on groundwater quality discharging to the designated Natura 2000 conservation sites located at Northwest Irish Sea SPA.

- Local underground flow paths (<500m) and little connectivity which are characteristic of this locally important aquifer classification, indicate there is no hydrogeological connection/linkage to the Natura 2000/conservation/protection areas located at the Northwest Irish Sea SPA, located c. 1.7km east of the development at the point of closest proximity (i.e. the 1.7km distance of separation between the site and the subject SPA exceeds the <500m local flow paths within the aquifer, thus negating any potential for hydrogeological connectivity / pathway linkage to sensitive receptors.
- There are no high risk (S-P-R) pollutant linkages present.

Figure 5.10: Conceptual Site Model (CSM) Cross-Section



5.3.10 TII METHODOLOGY

Based on the TII methodology, the criteria for rating site importance of Soil and Geological features, the importance of the features at this proposed development site is rated as *Low Importance*. This is based on the assessment that the attribute has a low-quality, significance or value on a local scale

Based on the TII methodology, the criteria for rating site importance of hydrogeological features, the importance of the features at this proposed development site is rated as *Medium Importance*. This is based on the assessment that the attribute has a medium-quality significance or value on a local scale and the nature of the aquifer, being classified as a locally important aquifer.

5.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

In summary, the proposed development will consist of the following:

- Construction of 815 no. dwellings, open space, community/retail floorspace and 2 no. creches on an overall site area of 24.91 hectares.
- The development includes the provision of C-Ring Road to link into the existing R122 roundabout with vehicular access also from the Boulevard, Hamlet Lane, & Flemington Lane.
- Provision of surface water attenuation measures, connection to water supply, provision of foul drainage infrastructure to Irish Water specifications and all ancillary site development, construction, and landscaping works;
- The proposed development includes a SuDS drainage design, boundary treatments, lighting, servicing and utilities, signage, and associated and ancillary works, including site development

works above and below ground. All ancillary site development, landscaping and construction works to facilitate foul, water and service network connections.

A full description of the proposed development is contained in Chapter 2 of the EIAR. The following are the characteristics of the proposed as they relate to the Land, Soils, Geology and Hydrogeology receiving environment

5.4.1 CONSTRUCTION PHASE

The key civil engineering works which relate to the land, soil geology, and hydrogeological environment during construction of the proposed development are summarised below:

- During the construction phase, excavated soil and stones (c. 75,038 m³) will be generated from the excavations required to facilitate site levelling to the necessary base level and construction of new foundations. It is anticipated that c. 19,507 m³ of this excavated soil and stone will be reused on site. It is anticipated that c. 55,531 m³ of excavated material will subsequently need to be removed off site and disposed of at a fully authorised soil recovery facility.
- Storage of aggregate materials such as sands and gravels will be stored in clearly marked receptacles in a secure compound area within the contractors' compound on site. Temporary storage of spoil will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment and solid matter. Any excavated material temporarily stockpiled onsite for re-use during reinstatement will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc;
- Temporary storage of fuel required on site for construction traffic will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage.
- There will be a requirement for deliveries of imported engineering fill (sands and gravels), and other construction materials include, steel structure, concrete, cladding, ducting and piping. Construction materials will be brought to site by road. Soil requiring removal offsite will be removed from site regularly to ensure there is minimal need for stockpiling. Some of the topsoil will be re-used on site for backfill (levels in some areas need to be raised) and landscaping with some export required. Any surplus topsoil material will be transported off site and disposed of at a fully authorised soil recovery facility / site.
- Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site.
- No significant dewatering is anticipated during the construction phase which would result in the localised lowering of the water table.
- No Abstraction of groundwater is included in this development.

5.4.2 OPERATIONAL PHASE

In relation to Land Soil, Geology and hydrogeology the relevant characteristics are as follows:

- The proposed application development will result in the increase in hardstanding area.
- During operation measures there is no requirement for bulk fuels or chemical storage
- There is no requirement for discharge to ground and no requirement for abstraction of groundwater.
- No long-term dewatering during is anticipated for this development.
- Provision of underground attenuation tanks and associated infrastructure as part of the surface water systems along with installation of bypass hydrocarbon / petrol interceptors.

5.5 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section details the potential impacts to land, soil and groundwater associated with the proposed development. As outlined below the activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the geological and hydrogeological environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the proposed development.

5.5.1 DO-NOTHING IMPACT

There are no predicted impacts should the proposed development not proceed. If the proposed development were not to go ahead (i.e., in the Do-Nothing scenario) there would be no excavation or construction or operational impact at this site. There would, therefore, be a **neutral** effect on the land, geological and hydrogeological environment.

The site is zoned for development, and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies and, therefore, the likely effects would be similar to this proposal, as described in the following sections.

5.5.2 CONSTRUCTION PHASE

5.5.2.1 Potential Impacts on Land, Soil, Geology, and Hydrogeology

Excavation & Infilling

Levelling of the ground and excavation for foundations (c. 75,038 m³) for the main buildings will require the excavation of topsoil, subsoil and potentially bedrock (if encountered). It is anticipated that c. 19,507 m³ of this excavated soil and stone will be reused on site. It is anticipated that c. 55,531 m³ of excavated material will subsequently need to be removed off site and disposed of at a fully authorised soil recovery facility. Import of c. 74,754 m³ of clean engineering fill material will be required.

The expected average depth of excavation is approximately 2.0 mBGL.

The geotechnical site / ground investigations findings indicate that bedrock excavation (rock breaking) will be required during the excavation works to achieve formation level. Localised bedrock excavation is anticipated in the northern portion of the site down to a maximum of 1.0 mBGL into fractured rock. For this reason, no significant dewatering is anticipated. Groundwater drawdown is therefore not considered to be a risk to adjacent buildings side slopes.

The risk of contaminated soils being present on-site is low based on previous site use and confirmed by on-site soil sampling and analysis. Material that is exported from site, if not correctly managed or handled, could impact negatively on human beings (on-site and off-site) as well as water and soil environments.

There is no requirement for any significant or long-term groundwater dewatering during construction.

Accidental Spills & Leaks

As with all construction projects, there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water arising from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction, if contaminated water is allowed to percolate to the aquifer.

There is potential for shallow soils to become contaminated with pollutants. There is minimal risk of aquifer contamination due to the nature and thickness of soil cover present at the site providing a natural level of protection to accidental discharges or spillages during the construction phase.

During the construction of the proposed development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage; and
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Accidental spillages that are not mitigated may result in localised contamination of soils and groundwater underlying the site, should contaminants migrate through the subsoils and impact the underlying groundwater. Groundwater vulnerability at the site is currently classified as low throughout the entire site. Any soil stripping will further reduce the thickness of subsoil and the natural protection they provide to the underlying aquifer.

Soil requiring removal offsite will be removed from site regularly to ensure there is minimal need for stockpiling. All of the topsoil will be re-used on site for backfill (levels in some areas need to be raised) and landscaping with some export required. Any soils, subsoils and stone removed from the site will be transported off site and disposed of at a fully authorised soil recovery site.

There is potential for groundwater to become contaminated with pollutants associated with construction activity. Contaminated groundwater which arises from construction sites can pose a significant short-term risk to the underlying Balbriggan GWB quality for the duration of the construction if contaminated water is allowed percolate to the aquifer. During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Excavation of soil and near-surface rock head will be required for levelling of the site to render it suitable for building the building platform. Local removal and reinstatement (including infilling) of the 'protective' topsoil and subsoil cover across the development area at the site will not change the overall vulnerability category for the site. Capping significant areas of the site by hardstand/building following construction and installation of drainage will minimize the potential for contamination of the aquifers beneath the site.
- Excavated and stripped soil can be disturbed and eroded by site vehicles during the construction. Rainfall and wind can also impact on non-vegetated/uncovered areas within the excavation or where soil is stockpiled. This can lead to run-off with high suspended solid content which can impact on water bodies. The potential risk from this indirect impact to water bodies and/or habitats from contaminated water would depend on the magnitude and duration of any water quality impact.
- Due to the historical greenfield use at the site, the risk of contaminated soils being present onsite is considered low.
- Soil sample results confirmed soils/subsoils onsite are not contaminated. However, in the event of any evidence of soil contamination being found during either the excavation or the construction works, appropriate remediation measures will be employed. Any contaminated soil will be delineated, removed and stored on impervious quarantine areas pending testing to confirm appropriate removal and disposal to permitted licensed waste facilities. Records of disposal will be retained on site for inspection by Fingal County Council (FCC).
- Accidental discharges can also occur from welfare facilities during construction activities. Wastewater can contain high levels of bacteria, chemicals, and organic matter, which could contaminate nearby water sources if discharged incorrectly. The establishment and use of welfare

facilities and connection to the existing foul sewer within the site, ensures that there are no potential significant impacts; therefore, no additional mitigation is required.

- A Construction Drainage Control System will be put in place so that all silt laden water will be diverted to temporary settlement storage tanks prior to discharge. This discharge, and the associated pollution control measures, will be subject to the approval of the Local Authority.
- Temporary construction surface drainage and sediment control measures, including the use of SUDS, will be provided before earthworks commence. The drainage design follows the natural topography of the site and utilises petrol/hydrocarbon/oil interceptors, silt traps along all gullies, house inspection chambers and SuDS manholes. Accordingly, all discharges to surface waters will be suitably treated through silt remediation (silt traps) and petrol/hydrocarbon/oil interceptors prior to discharge. There will be no direct discharge of surface water from any element of the works without proper attenuation and treatment.

In the absence of mitigation measures the potential impacts during the construction phase on land, soils and geology, hydrogeology (groundwater) are negative, not significant and short term.

Loss of Agricultural Land

There will be a local loss of agricultural soil; however, the area of development is small in the context of the overall agricultural land available in the region. The entire site is zoned for development. Within the overall context of Ireland's available farmland, the loss is negligible. There will be no impact to mineral resources in the area as a result of the proposed development.

5.5.2.2 Source-Pathway-Receptor Linkage with Northwest Irish Sea SPA

There are no source pathway linkages with any ground water dependent ecosystems. However, the groundwater body underlying the proposed development does discharge to the estuary. No likely exceedance of groundwater threshold concentrations at the Northwest Irish Sea is likely based on the loading, pathway (over burden thickness, cohesive/low permeability type, local flow paths and low fracture connectivity within the aquifer) together with attenuation and dilution within the pathway prior to discharge to the SPA.

Without the consideration of mitigation measures, the construction phase of the proposed development will likely have a **neutral, imperceptible** and **short-term** impact on the S-P-R linkage with the Northwest Irish Sea.

5.5.2.3 Potential Impacts on Human Health and Populations

The site is not located near any public groundwater supplies or group schemes. As previously mentioned, there are no groundwater source protection zones, Groundwater Drinking Water Protection Areas (Public Supply Source Protection Areas OR Group Scheme Preliminary Source Protection Areas) in the immediate vicinity of the site. Given the separation distance between the proposed development site and the nearest groundwater source protection zones there are no potential impacts on groundwater source protection zones (proposed site is outside of the zone of contribution of this supply).

There is no source pathway linkage to the underlying aquifer or any Public Drinking Water Supply scheme or Source Protection Zone (SPZ). The nature and thickness of soil cover present at the site provides a natural level of protection. No bulk oil storage is required during site operation. The site is not located within any source protection zones (SPZs), public groundwater supplies or group schemes with the Public Supply Source Protection Area in closest proximity to the proposed development site is BOG OF THE RING PWS which is located approximately 2.2 km southwest of the site. The proposed site is outside of the zone of contribution of this supply.

A reduction in groundwater quality via unmitigated pollutants entering the soil and migrating to the underlying Balbriggan GWB would have potential to lead to negative impacts on human health and populations if a pathway existed. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. Furthermore, humans can also be exposed to petroleum hydrocarbons or other contaminants by inhaling the fumes / dust from contaminated soil. Depending on the type of contaminant and the level of exposure, soil contamination can have serious health implications.

None of the wells listed in the immediate vicinity of the site are categorised as domestic use. The area is serviced by Local Authority mains therefore it is unlikely that any wells are used for potable supply.

No likely impact on the groundwater quality is foreseen due to low potential loading, natural attenuation within overburden and lack of geological faulting / fracture connectivity and local underground flow paths (<500m), thereby reducing potential for off-site migration.

The waste soil classification (WAC) classified the majority of samples as non-hazardous / inert.

Given this greenfield land has historically been utilized for agricultural purposes, and the lack of documented / recorded illegal historic landfills in the vicinity, the potential risk of extensive contamination is considered low.

Any contaminated / hazardous soils encountered onsite will be removed from site and sent to a licenced treatment / disposal facility that accepts the corresponding soil classification / category, while clean soils maybe be reused onsite for backfill of landscaping. Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the potential for contamination of soil and groundwater are **neutral, imperceptible and short term**.

5.5.2.4 Potential Impacts on Water Framework Directive Status

There is a potential of accidental discharges during the construction phase (as previously set out in Section 5.5.1), however no likely impact on the underlying aquifer due to the low permeability cohesive soil cover present on the site.

Even in the absence of mitigation measures, the potential impact on Water Framework Directive status of the Balbriggan GWB or its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and third RBMP 2022-2027 during the construction phase is considered to be **neutral, imperceptible and short term (temporary)**.

5.5.2.5 Overall Impact of Construction Phase

Without the consideration of mitigation measures, the construction phase of the proposed development will likely have a negative, short-term, slight impact without mitigation in place.

5.5.3 OPERATIONAL PHASE

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

- There is a potential for leaks and spillages from vehicles along roads and in parking areas. Any accidental emissions of oil, petrol or diesel could cause soil / groundwater contamination if the emissions are unmitigated.
- A proportion of the Site will be partially covered in new hardstanding. This will provides protection to the underlying aquifer but also reduce local recharge in this area of the aquifer. As the area of the aquifer is large, this reduction in local recharge will have a not significant change in the natural hydrogeological regime.

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

These potential impacts are not anticipated to occur following the implementation of mitigation measures outlined in Section 9.6.

There will be no direct discharges to the ground or abstractions from the bedrock aquifer during the operation of the development. The potential impacts of the development post development in relation to land soils and environment have been assessed under the following headings:

- Localised and Minor Accidental Emissions to ground from a car leak/delivery vehicle or truck.
- Increase in hardstanding area will result in a localised alteration / reduction in recharge to the aquifer due to a decrease in local recharge (percolation to ground). As the area of aquifer is large this reduction in local recharge will have no significant change in the natural hydrogeological regime. This provides protection to the underlying aquifer but also ultimately reduces local recharge in this area of the aquifer.

SUDS features such as green roofs, and the inclusion of modular permeable paving, swales, bioretention systems, detention basins, petrol/hydrocarbon interceptors which will provide a surface water treatment train and promote source control throughout the development while also providing attenuation storage at source and facilitate recharge to ground. Surface water drainage will be directed to attenuation storage and flow control for discharge from the catchment will be achieved via the employment and incorporation hydrobrake (vortex flow control device).

Any accidental release of hydrocarbons from trafficked areas will discharge through oil/petrol interceptors on the stormwater drains rather than to ground.

Refer to 'Chapter 6- Hydrology' for a detailed outline of the proposed surface water (stormwater) drainage design / strategy.

In the absence of mitigation measures, the operational phase of the proposed development will likely have a **neutral, imperceptible**, and **long-term** impact on land, soils, geology and hydrogeology in the receiving environment.

5.6 MITIGATION MEASURES

This section outlines the measures that will be employed in order to minimise the impact on land, soils, and groundwater of the proposed development.

5.6.1 CONSTRUCTION PHASE

A Preliminary Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by Paul McGrail Consulting Engineers Ltd, included (See Appendix D, Volume III of the EIAR). It contains the best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, as well as any additional measures required pursuant to planning conditions which may be imposed. This document outlines the best practice construction techniques and methodologies which will be implemented onsite during construction of the proposed development including measures to protect waterbodies. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the CEMP and this EIAR will be employed on site during the construction phase by the Contractor.

The CEMP and mitigation measures set out in this EIAR as well as the NIS will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions

change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA, 2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

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

According to the subject CEMP, all existing surface water drainage elements shall be maintained free from waste materials generated during the construction of the proposed development, including the initial site clearance and excavation. Routine visual inspections by the contractor shall reduce any risk of excess construction materials causing obstructions to surface water drainage and any potential flooding occurring. A maintenance schedule and operational schedule must be established by the contractor for silt and pollution control measures during the construction period. This should be undertaken in consultation with the relevant statutory authorities.

The CEMP provides actions and measures which will be undertaken for the purpose of environmental management and pollution prevention during the construction phase. As there is potential for run-off to indirectly discharge to the local drainage network consisting of drainage ditches which convey flow and discharge to the Bremore River (and its tributaries, the Cloghader Stream and Clonard Brook Stream). In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- SuDS will be constructed in line with manufacturer's guidelines / best practice methods.
- Foul drainage from site offices and compound, 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.
- Process water used during construction will be disposed of appropriately. Rainwater will also accumulate on the site during construction. This water will be discharged directly via suitable pollution control and attenuation measures either directly to ground within the site or to foul sewer systems via portions of the existing wastewater network.
- Where available proposed permanent connections to the public sewer systems required for the operational phase may be used temporarily for the construction phase, to optimise efficiencies and avoid the creation of new outfalls for temporary construction only.
- A Construction Drainage Control System will be put in place so that all silt laden water will be diverted to temporary settlement storage tanks prior to discharge. This discharge, and the associated pollution control measures, will be subject to the approval of the Local Authority.
- Temporary construction surface drainage and sediment control measures, including the use of SuDS, will be provided before earthworks commence. The drainage design follows the natural topography of the site and utilises petrol/hydrocarbon/oil interceptors, silt traps along all gullies, house inspection chambers and SuDS manholes. Accordingly, all discharges to surface waters will be suitably treated through silt remediation (silt traps) and petrol/hydrocarbon/oil interceptors prior

to discharge. There will be no direct discharge of surface water from any element of the works without proper attenuation and treatment.

- Pipe systems and orifices will be checked for blockages or partial blockages.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site.
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.

5.6.1.1 Soil Management

The strategy for controlling and mitigating potential adverse environmental issues related to soil and contamination during construction will include the following, as appropriate:

- Identification and assessment of the potential for residual ground contamination to be presented prior to the start of any excavation works.
- Minimisation of potential risks to site workers as required by the Safety, Health and Welfare (Construction Regulations) 2013.
- Testing and sampling of excavated soils in order to assess the suitability of materials for re-use on site.
- Soils will be stabilised and protected from erosion whilst planting becomes established. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Dust suppression from any contaminated soils by the regular use of water spray during any dry conditions, sheeting of haulage vehicle loads.
- Stockpiling of contaminated materials will be avoided where possible.
- Stockpiles will be treated to prevent windblown dust.
- The handling and storage of any potentially hazardous liquids on site, e.g. fuels and chemicals, will be controlled and best practice guidelines. Storage tanks/container facilities will have appropriate bunding within the designated area.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- If hazardous liquids escape, remedial action will be taken as soon as possible.
- Where unforeseen contamination is identified during the course of the work, specific investigations will be carried out in the areas in question and appropriate health and safety procedures will be implemented during the removal of the material. A strategy will be prepared to identify, analyse, segregate and control existing contaminated materials on site. In addition to the measures above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

5.6.1.2 Run Off & Suspended Solids

- It is anticipated that there will be 10m minimum buffer zone to the water course which on the site which comprise field drainage ditches (no main water courses / river waterbodies exist within the extent of the site boundary).
- Run-off from the working site or any areas of exposed soil shall be channelled and intercepted at regular intervals for discharge to silt remediation / settlement measures. A temporary positive drainage system shall be installed prior to the commencement of the construction works, to collect surface water runoff from the site during construction. A temporary surface water management will throttle runoff and allow silt and suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to discharge directly to the local drainage network.
- Water contaminated with silt will not be allowed to enter a watercourse or drain as it can cause pollution. All parts of the drainage system will be protected from construction runoff to prevent silt clogging the system and causing pollution downstream. Silt reduction measures to prevent this include, early construction of sediment management basins, channelling runoff away from watercourses and surface water drains and erosion prevention measures. Following construction, subsoil that has been compacted during construction should be broken up prior to the re-application of topsoil to reinstate the natural infiltration performance of the ground.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Silt deposited during construction will be removed.
- Soils will be stabilised and protected from erosion whilst planting becomes established.
- Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plant and machinery will also be carried out in bunded areas to minimise risk of any potential pollutants being discharged from the site.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Foul drainage from site offices and compound, 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.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar with the emergency procedures and use of the equipment.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts;
- Silt reduction measures on site and settlement measures (e.g. silt traps and settlement tanks/ponds or equivalent);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m;
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection;
- Construction materials, including aggregates etc. will be stored a minimum of 50-meter buffer distance from any surface water bodies and surface water drainage points;

- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination;
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust;
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations;
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

5.6.1.3 Sources of Fill and Aggregates

- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- All fill and aggregate for the proposed development will be sourced from reputable suppliers per the project Contract and Procurement Procedures. All suppliers will be vetted for:
 - Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development;
 - Environmental Management status; and
 - Regulatory and Legal Compliance status of the Company.

5.6.1.4 Cement /concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Irish Water / FCC.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

5.6.1.5 Hydrocarbons and other construction chemicals

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

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

5.6.2 OPERATIONAL PHASE

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

The proposed development does not include for any bulk chemical storage including fuel storage. As the site will be paved and drained, any fuel spills from cars will drain to the hydrocarbon interceptors on the stormwater drainage system. All stormwater drainage is through the permitted attenuation.

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. The drainage network will consist of attenuation to the green-field runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore be intercepted by and discharge to the proposed surface water / stormwater drainage network and be treated in Petrol interceptors (oil separators) prior to outfalling into the main system and downstream catchment. Therefore, the risk of accidental discharge has been adequately addressed through design. The purpose of these SuDS features is to treat runoff and remove pollutants to improve quality, restrict outflow and control quantity and increase overall amenity value.

For further information on the surface water (stormwater) drainage design / strategy, refer to Chapter 6-Hydrology.

5.7 RESIDUAL IMPACTS

5.7.1 CONSTRUCTION PHASE

5.7.1.1 Land, soils, Geology, Hydrogeology

The implementation of the mitigation measures outlined in Section 5.6 of this chapter will ensure that targeted rates of impact to land, soils and ground water are achieved at the site of the Proposed Development during construction and operational phases. When mitigation measures are implemented throughout construction the predicted impact on the environment will be short-term, imperceptible, and neutral. With the measures outlined in the EIAR and CEMP, the predicted impact will be **neutral, imperceptible, and short-term**.

5.7.1.2 Human Health and Population

The implementation of the mitigation measures outlined in Section 5.6 of this chapter will ensure that the potential impacts on human health and populations during the construction phase are adequately mitigated. The residual effect on during the construction phase is considered to be **neutral, imperceptible, and short-term**.

5.7.1.3 Water Framework Directive

Even in the absence of the mitigation measures detailed in Section 5.6, there will be no predicted degradation of the current Balbriggan (GWB) groundwater body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of groundwater bodies and as such will not impact on trends in water quality and over all status assessment.

The residual effect on Water Framework Directive Surface and Groundwater bodies during the construction phase is considered to be **neutral, imperceptible and short-term**.

5.7.2 OPERATIONAL PHASE

5.7.2.1 Land, soils, Geology, Hydrogeology

The implementation of the mitigation measures detailed in Section 5.6, will ensure that the potential impacts on land, soils, geology, hydrogeology once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water quality during the operational phase is considered to be **neutral, imperceptible, and long-term**.

Following the TII criteria (refer to Volume III of the EIAR [Appendix C 5.1]) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

5.7.2.2 Human Health and Population

The implementation of the mitigation measures detailed in Section 9.6, will ensure that the potential impacts on human health and populations once the proposed development is constructed and operational are adequately mitigated. The residual effect on human health and populations during the operational phase is considered to be **neutral, imperceptible, and long-term**.

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5.7.2.3 Water Framework Directive Status

There is no potential for adverse or minor temporary or localised effects on the Balbriggan groundwater body (GWB) as a result of the Proposed Development. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third RBMP 2022-2027.

Even in the absence of the mitigation measures detailed in Section 9.6, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the third RBMP 2022-2027.

There are appropriately designed mitigation and design measures which will be implemented during the construction and operation phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction and operational phases, however these are temporary short-lived events that will not impact on the water status of underlying aquifer long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on Water Framework Directive Surface and Groundwater bodies during the construction phase is considered to be **neutral, imperceptible and long-term**.

5.8 MONITORING / REINSTATEMENT

The management of land, soils and ground water during the construction phase will be monitored by the Contractor to ensure compliance with above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

5.8.1 CONSTRUCTION PHASE

During construction phase the following monitoring measures will be implemented:

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and
- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Pouring of cement-based materials for works will only be carried out in dry conditions.
- Regular inspection of surface water run-off and sediments controls (e.g., settlement & silt remediation measures e.g. silt traps / distilling tanks);

5.8.2 OPERATIONAL PHASE

There will be no requirement for groundwater monitoring as there is no likely discharge to ground, long term dewatering or abstraction of groundwater.

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to soil or groundwater.

5.9 INTERACTIONS

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to land, soils, geology, and hydrogeology relate to Biodiversity (Chapter 4), Hydrology / Water (Chapter 6), and Air Quality (Chapter 7) as follows:

5.9.1 BIODIVERSITY

The proposed development may have temporary negative impacts on biodiversity at site level during construction due to excavation and removal of soil with resultant impact on local biodiversity. It will not impose any significant impact on European Designated sites due to the treatment integrated in the surface water (stormwater) and foul (wastewater) drainage strategy and associated mitigation measures (as previously outlined in section 6.6 of Chapter 6- Hydrology) coupled with the large distance involved in the pathway and significant dilution factor downstream in the catchment and the Northwest Irish Sea.

5.9.2 HYDROLOGY

As mentioned above, there is a close inter-relationship between soils, geology, hydrogeology and Chapter 6 - Hydrology. During construction of the proposed development, there will be soil excavation that could impact surface water quality if not adequately mitigated.

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and Hydrology during the operational phase.

Therefore, all mitigation measures discussed are considered applicable to both components. Adherence to the mitigation measures presented above and in Chapter 6 – Hydrology will ensure the effect is **negative, imperceptible** and **short-term**.

5.9.3 AIR QUALITY

During construction of the proposed development, there will be a proportion of dust created during excavation (enabling works) and construction activities that could impact air quality if not adequately mitigated.

5.9.4 CULTURAL HERITAGE, ARCHAEOLOGY, & ARCHITECTURAL HERITAGE

Excavation could result in the discovery / finding or unearthing of shallow subsurface archaeology. Prior to any subsurface excavations, the site will be assessed by an archaeologist and appropriate mitigation measures agreed accordingly.

5.9.5 WASTE

Waste: Excavation could result in encountering contaminated soil. This will undergo environmental testing and be disposed of at a suitable licenced waste facility as required.

5.9.6 TRAFFIC AND TRANSPORTATION

Local Traffic and transportation will be implemented by the additional vehicle movements generated by the volume of excavated soil that will have to be transported off site, resulting in an increase of heavy good vehicles (HGVs) during construction. The increase in vehicle movements as a result of excavated soil removal during the construction phase will be temporary in duration. Traffic-related impacts during the construction and operational phases are addressed in Traffic & Transportation chapter of this EIAR.

5.10 INDIRECT AND/OR SECONDARY IMPACTS

The proposed development requires excavation works which if not managed appropriately could give rise to the generation of dust.

In accordance with EPA Guidelines (2022), secondary or indirect impacts refer to environmental effects that occur away from the project site or through complex impact pathways. Having regard to the nature, scale and location of the proposed residential development, and the specific works involved during

construction and operation, there is no potential for significant indirect or secondary impacts on land, soils, geology or hydrogeology. The development does not rely on functionally interdependent activities occurring off-site that would give rise to such effects.

5.11 CUMULATIVE IMPACTS

A list of developments in the vicinity of the subject lands is contained in Chapter 17 of this EIAR. All cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such, any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

5.11.1 CONSTRUCTION PHASE

There are existing residential and commercial developments close by, along with the multiple permissions in the area. This chapter has been prepared with reference to the list of other developments in the locality which are set out in chapter 17 of this EIAR.

In relation to the potential cumulative impact on land soils and hydrogeology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- soil and groundwater contamination due to accidental hydrocarbon/cement leakage to ground.

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation (see Appendix D, Volume III of the EIAR). This together with the mitigation measures set out in Section 5.6 outlines the best practice construction techniques and methodologies which will be implemented during construction of the proposed development to minimise potential for contamination.

The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The works contractors for other planned or permitted developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022)).

The implementation of mitigation and monitoring measures detailed in Section 5.6; and 5.8 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and short-term**.

5.11.2 OPERATIONAL PHASE

In relation to the potential cumulative impact on hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off;

- Increased risk of minor accidental discharge of hydrocarbons from car parking areas and along roads is possible unless diverted to surface water system with petrol interceptor;
- There will be a small loss of greenfield area locally as part of the proposed Project.

The proposed development and the other permitted development listed in close proximity will result in an increase in hard standing which will result in localised reduced recharge to ground. The aquifer underlying the site is “Locally Important Aquifer (Lm) –Bedrock which is Generally Moderately Productive in local zones”. The implementation of SuDs measures on site will mitigate against and reduce the recharge rate to ground.

All nearby developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022)).

The implementation of mitigation measures detailed in Section 5.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and long-term**.

5.12 DIFFICULTIES ENCOUNTERED

There were no significant difficulties encountered in compiling the specified information for this EIA Chapter.

5.13 SUMMARY

There will be **no long-term residual impact** on land soil geology and hydrogeological receptors, either within or in the vicinity of the proposed development as a result of the proposed development.

5.14 REFERENCES

- Environmental Protection Agency Act 1992 as amended.
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) ‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’ (2022).
- Department of Communications, Climate Action, and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland’s National Waste Policy 2020-2025 (Sept 2020).
- Fingal County Council (FCC), Fingal County Council Development Plan 2023-2029.
- BS 5906:2005 Waste Management in Buildings – Code of Practice.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.
- EPA (2025). EPA Maps.
- GSI (2025). GSI Map Viewer.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- NPWS (2025). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- Teagasc (2025). Teagasc Map Viewer.
- National Roads Authority (NRA) (2009). Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

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6.0 WATER, HYDROLOGY, HYDROGEOLOGY

6.1 INTRODUCTION

This chapter assesses and evaluates the likely significant effects of the development on the hydrological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

This Chapter has been written and prepared by Luke Maguire Environmental Consultant and Geoscientist (BSc) at AWN Consulting and Marcelo Allende (BSc, BEng) is a Principal Environmental Consultant (Hydrologist) at AWN Consulting.

Luke Maguire; is an Environmental Consultant at AWN with over 4 years of experience in Environmental Consulting and water resources. Luke holds a B.Sc. in Geoscience from Trinity College University of Dublin and has worked on a range of developments including pharmaceutical plants, medical device facilities, ICT facilities and energy projects. Luke has experience in contaminated soil sampling and analysis, basement impact assessments, bulk excavations and largescale dewatering processes. Additionally, Luke has gained experience in Environmental Impact Assessment (EIAR), Due Diligence Reporting, Hydrological and Hydrogeological Risk Assessment, Flood Risk Assessment and WFD Assessment Reporting and has worked in multiple Environmental monitoring disciplines such as Chemical Wastewater (Intel), Ground Gas, Surface Water, and Groundwater Monitoring at numerous sites across Dublin.

Marcelo Allende is a Principal Environmental Consultant (Hydrologist) with AWN Consulting with over 20 years of experience in water resources technical studies, conceptual and numerical hydrological/hydrogeological modelling and environmental consultancy. Marcelo holds a degree in Water Resource Civil Engineering (BEng, Hons) from the University of Chile and a Bachelor of Science in Engineering (BSc, Hons). He has worked on a wide of range of projects including multi-aspect environmental investigations, geo-environmental impact assessments, surface and groundwater resource management, hydrological and hydrogeological conceptual and numerical modelling, strategic and site specific flood risk assessments (Stage 1,2 and 3), Due Diligence reporting, baselines studies, soils, surface water and groundwater monitoring and field sampling programmes on a variety of brownfield and greenfield sites throughout Ireland as well as overseas in Chile, Argentina, Peru and Panama. He also has detailed knowledge of environmental guidance, legislation, regulations & standards and expertise in GIS (expert level) and MATTE studies at COMAH establishments. He is currently a member of the International Association of Hydrogeologists (IAH, Irish Group) and a member of Engineers Ireland (MIEI).

6.2 METHODOLOGY

6.2.1 CRITERIA FOR RATING OF EFFECTS

This chapter evaluates the effects, if any, which the development has had or will have on Hydrology as defined in the Environmental Protection Agency (EPA) '*Guidelines on the Information to be contained in Environmental Impact Assessment Reports*' (EPA, 2022). In addition, the document entitled '*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*' by the Transport Infrastructure Ireland (TII, 2009, previously NRA) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the hydrological environment is based on the standard EIAR impact predictions table included in Chapter 1 which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the EPA Guidelines (2022) publication).

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The TII criteria for rating the magnitude and significance of impacts and the importance of hydrological attributes at the site during the EIA stage are also relevant in assessing the impact.

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

- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.

6.2.2 SOURCES OF INFORMATION

- Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:
- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).
- River Basin Management Plan for Ireland 2022-2027.
- Fingal County Development Plan 2023-2029.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Site specific data was derived from the following sources:
- Design site plans and drawings; and
- Consultation with the client.

Site specific data was derived from the following sources:

- Engineering Services Report. Proposed Residential Development at Flemington South LRD (Paul McGrail Consulting Engineers, 2025).
- Construction Environmental Management Plan (CEMP). Proposed Residential Development at Flemington South LRD (Paul McGrail Consulting Engineers, 2025)
- Flood Risk Assessment (FRA). Proposed Residential Development at Flemington South LRD (Paul McGrail CE, 2025)
- The proposed development design site plans and drawings; and Consultation with the project design engineers.
- Civil Engineering Pre-Planning Briefing Note, Paul McGrail Consulting Engineers, 2025.
- Site Investigation Report. Proposed New Housing development Naul Road Balbriggan IGSL Ltd (2019).
- EPA (2025). EPA Map Viewer (accessed in November 2025).

- GSI (2025). GSI Map Viewer (accessed in November 2025).

6.2.3 RELEVANT LEGISLATION & GUIDANCE

- Environmental Protection Agency (EPA) Advice notes on current practice in the preparation of Environmental Impact Statement (EPA, 2003) and Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2022).
- TII/National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Institute of Geologists Ireland (IGI) - Geology in Environmental Impact Statements, a guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001).
- Water Framework Directive (WFD) - Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy. This relates to the improvement of water quality across Ireland including rivers and groundwater bodies.
- River Basin Management Plan 2018-2021 (including regional plans by Local Authority Waters Programme (Waters and Communities 2020)).
- River Basin Management Plan 2022-2027.
- Waste Management Acts 1996 as amended;
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9/2010, as amended;
- European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016, S.I. No. 366/2016;
- Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration (Groundwater Directive);
- European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019;
- Environment Agency (EA), Land contamination: risk assessment (EA 2020);
- BS 10175:2011 + A2:2017 Investigation of potentially contaminated sites. Code of practice (British Standards Institute 2017);
- CIRIA C552 Contaminated Land Risk Assessment: A Guide to Good Practice (CIRIA 2001);
- Environmental Protection Agency, Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA 2013);
- Local Authority planning guidance as applicable;
- Uisce Eireann EIA Scoping;
- Consolidated EIA Directive 2011/92/EU and 2014/52/EU.

6.3 RECEIVING ENVIRONMENT (BASELINE SCENARIO)

The receiving environment is discussed in terms of hydrology.

The development will consist of the construction of 815 no. dwellings, open space, ancillary infrastructure, community/retail floorspace and 2 no. creches on an overall combined site area of 24.91 hectares and on multiple portions of separate parcels of land characterized by an agricultural function located at Flemington Lane in Balbriggan, North Co. Dublin.

The development site is located approximately 1.6 km west of the Balbriggan district town centre. The subject development is partially bounded by the Clonard Road (regional Route R122) and Bridgefoot and adjacent agricultural lands to the south and west, respectively. The site is bounded by Flemington Lane and agricultural lands to the north and by Taylor Hill Grange Residential Estate, among other adjacent / neighbouring residential housing estates to the east.

The site comprises multiple fields separated by internal and boundary hedgerows. Surface water, rainfall, is generally percolated to ground or runs-off via overland flow towards onsite drainage ditches and the Clonard Brook Stream in the south of the site.

The topography is relatively consistent with the site generally falling in elevation from northeast to southwest and characterized by minor localized undulations. The elevation falls from approximately 47m AOD (Above Ordnance Datum) to approximately 42m AOD from northeast to southwest. A portion of the central western section of the site located adjacent to the Clonard Road lies on elevated land at approximately 66m AOD. The topography in the southern portion of the site slopes / falls towards the Clonard Brook Stream / surface watercourse which flows to the south of the site, flowing in an east-northeast direction towards the Irish Sea at Balbriggan (EPA, 2025).

6.3.1 HYDROLOGY

The proposed development site is located within the former ERBD (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). The proposed development site is located in the Eastern River Basin District (ERBD).

According to the EPA maps, the entire proposed development site lies within the Nanny-Delvin Catchment (Catchment ID: 08). The vast majority of the proposed development resides within the PALMERSTOWN_SC_010 Sub-Catchment (Sub-Catchment ID: 08_2). The northernmost portion of the site is located within the Delvin_SC_010 Sub-Catchment (Sub-Catchment ID: 08_1). The current EPA watercourse mapping shows no watercourses within the proposed development site.

The main hydrological feature of the area is the Bremore River and its tributaries, the Clogheder Stream and Clonard Brook Stream (CLONARD_or_FOLKSTOWN_GREAT). The Bremore River outfalls / discharges to the Irish Sea (North-West Irish Sea SPA) north of Balbriggan Town Centre approximately 1.7 km east of the subject development (linear distance).

The site is drained by ditches which may convey flow to the east/southeast towards the Clonard Brook Stream, the Clogheder Stream and Bremore River during periods of heavy rainfall. These manmade ditches only serve the subject site and the agricultural fields immediately west and does not convey any upstream watercourse.

Figure 6.1: Hydrological Environment



6.3.2 SURFACE WATER QUALITY

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 – A River Basin Management Plan for Ireland (Dept. of Housing Local Government & Heritage, Sept 2024) has since been published.

During the development of this Plan, a prioritisation exercise was undertaken by the local authorities, the EPA and other stakeholders to identify those water bodies that require immediate action within this plan cycle to 2021. During the catchment characterisation, the EPA identified those water bodies either 'At Risk' of not achieving their objectives or 'Under Review'. The outcome of this prioritisation process was the selection of 190 Areas for Action across the 5 Local Authority regions. Within these 190 areas, a total of 726 water bodies were selected for initial actions during this RBMP cycle. There are 832 water bodies identified as being 'At Risk' of not achieving their environmental objectives under this Plan that have not been included in the Areas for Action. For most of these water bodies, targeted actions will be undertaken in the third cycle RBMP from 2022-2027. The draft 3rd cycle RBMP has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the Proposed Project.

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

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011)
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006).

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

In relation to the subject site, there are no EPA quality monitoring station points in close proximity or within any of the previously mentioned watercourses in hydrological connection to the site.

The Clonard Brook Stream and Bremore River belongs to the MATT_010 WFD surface water body (European Code: IE_EA_08M010900) whose most recent WFD River (surface) water status (2019-2024) is 'Poor' with a current WFD risk score (3rd risk cycle) of '*At risk of not achieving good status*'. This rating and the main pressures identified on the MATT_010 waterbody is attributed to poor ecological and biological status or potential (Catchments.ie, 2025).

According to the Palmerstown_SC_010 (Code: 08_2) Subcatchment Assessment report (WFD 2nd Cycle, 2018) the main pressures associated with the Matt_010 (adjacent, and downstream/downgradient of the site) include urban run-off (involving diffuse sources run-off) and Hydromorphology (involving Channelisation).

6.3.3 BATHING WATERS AND RECREATIONAL WATERBODIES

The local environment also includes areas of natural resources that relate to populations and human health that may be impacted by the proposed development, this includes economic resources, recreational and bathing waters, and drinking water resources.

A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the MATT_010 River Waterbody (Clonard Brook Stream or the downstream Bremore River).

6.3.4 UTILITIES AND DRAINAGE INFRASTRUCTURE

There is no existing foul connection for the proposed site.

Presently, there is no existing watermain connection for the proposed site.

Currently, there is no artificial drainage infrastructure within the site. The proposed development is located in agricultural land which currently drains by overland flow to the local drainage ditches which convey flow to the MATT_010 River Waterbody to the east and southeast of the site. For further details on utilities refer to Chapter 13 – Material Assets – Utilities.

6.3.5 SURFACE WATER DRINKING SUPPLIES / RESOURCES

A review of the Environmental Protection Agency's (EPA) online mapping, which includes the Register of Protected Areas (RPA) established under the Water Framework Directive (WFD), indicates the field drainage ditches that traverse the site and river waterbodies in the vicinity of the site which are listed above in section 6.3.1 are not located within a designated Surface Water Drinking RPA. This classification of drinking water river lines has been delineated in accordance with the European Communities (Drinking Water) (No. 2) Regulations 2007 (SI No. 278/2007). This regulatory framework aims to ensure the protection of water resources utilised for human consumption, thus safeguarding public health and the environment.

6.3.6 FLOOD RISK ASSESSMENT

Paul McGrail Consulting Engineers have conducted and prepared a Stage 1 Flood Risk Assessment. This Site-Specific Flood Risk Assessment has been undertaken in accordance with the FRM guidelines. The review of the available data on fluvial, pluvial, tidal/coastal and groundwater flooding shows that the entire proposed development site is within Flood Zone C for flooding. The proposed development may be categorised as “Appropriate” as per the FRA Guidelines (OPW, 2009) as the development consists of essential infrastructure and thus qualifies as a “Highly Vulnerable Development”. However, given that the site is outside the extents of Flood Zone A and Flood Zone B and is located entirely within coastal and fluvial Flood Zone C, the development is subsequently deemed appropriate at the subject site/lands and hence a Justification Test for Development Management is not required in this case.

No residual risk is foreseen as the development is located outside any flooding zones associated with future scenarios. (Paul McGrail CE, 2025). Based on this information the proposed development complies with the appropriate policy guidelines for the area which include the Fingal County Development Plan 2023-2029. Overall, it is concluded that this Proposed Development and the surrounding area is at low risk from flooding. As mentioned above, this type of development is deemed appropriate for the flood risk zone (Paul McGrail CE, 2025).

The details of each category of flood extents, flood zonation and probability for the subject site are summarized below:

Predictive flood maps from Floodinfo.ie mapping dataset were examined in order to determine flood risk in the vicinity of the site. A review of the historic flood information did not highlight historical flood events (single or reoccurring) onsite or the immediate vicinity surrounding area. Floodinfo.ie (formerly floodmaps.ie) was consulted to identify historical flooding events within the vicinity of the site. The nearest past flood event is approximately 1.6km southwest of the site, it is related to a reoccurring flood event at Naul Balbriggan Road, Dalahassey.

6.3.6.1 Fluvial (River) and Coastal (Tidal)

Predictive flood maps involving detailed hydraulic modelling of river and coastal waterbodies was undertaken as part of the National CFRAM study. As part of the CFRAM programme provisional flood maps had been produced by the OPW which have been used in this assessment. The FRA flood maps do not indicate any flooding risk throughout the subject site.

Accordingly, the flood risk mapping demonstrates that the proposed development site is entirely outside the Flood Zones A and B; i.e., within Flood Zones C for Fluvial (refer to Figure 6-2 & 6-3 below) and Coastal flooding (refer to Figure 6-4 & 6-5 below). The subject area is in Flood Zone C i.e., the probability and risk of flooding is low (less than 0.1% AEP- Annual Exceedance Probability or in 1 in 1000 year) for Fluvial and coastal (tidal) flooding (Floodinfo.ie, 2025).

Figure 6.2: CFRAM Fluvial Flood Extend (OPW/Floodinfo.ie, 2025)

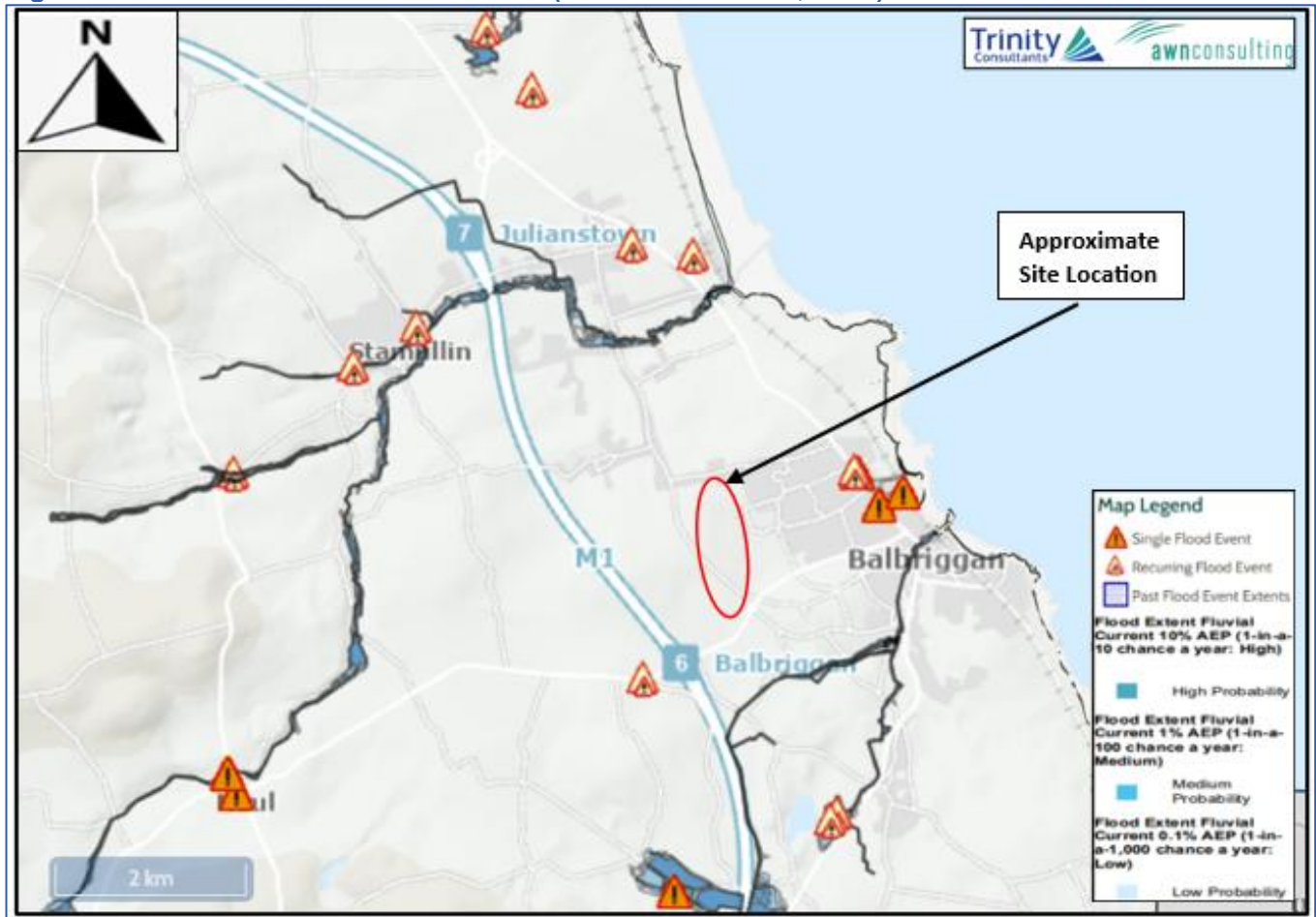
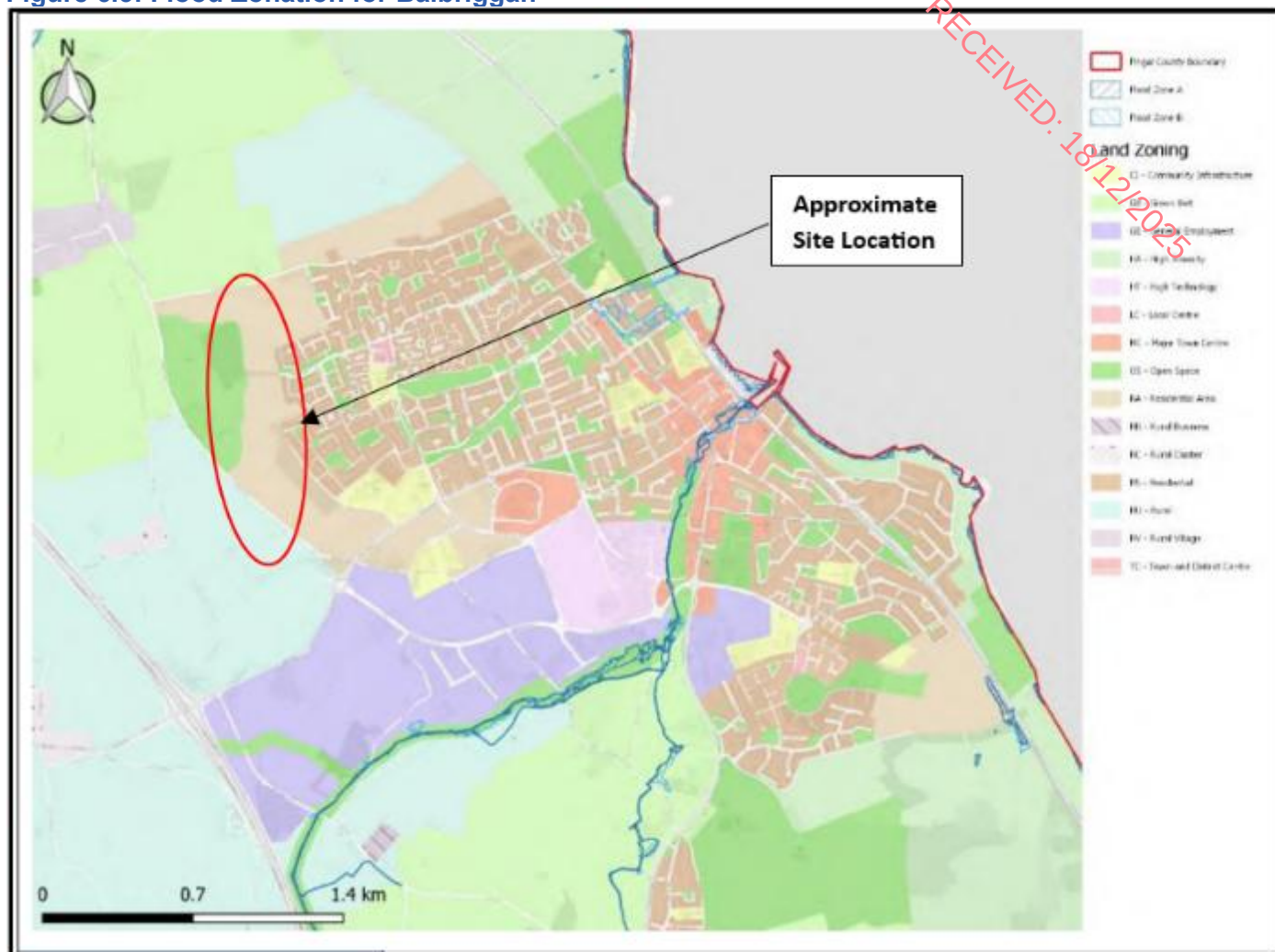


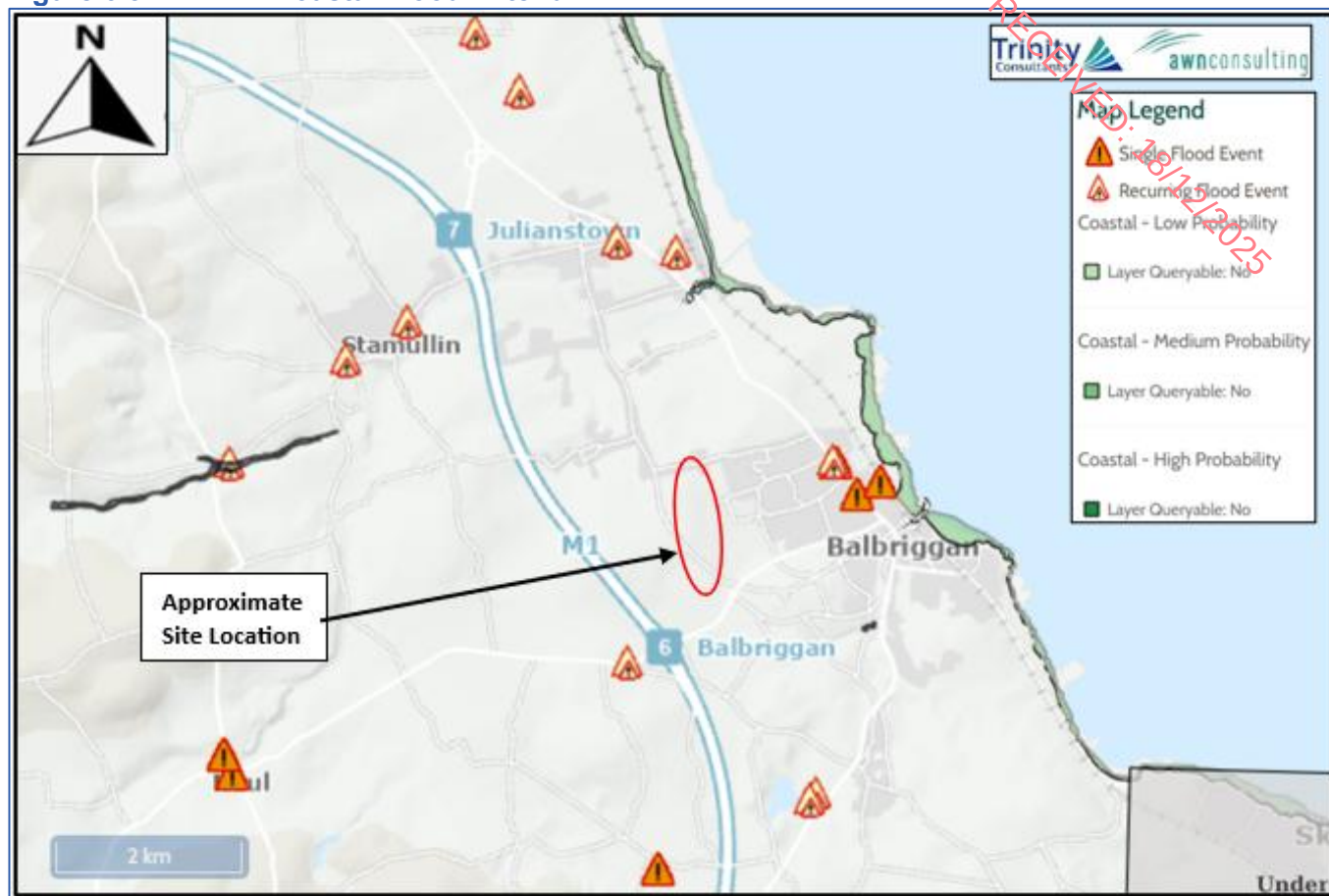
Figure 6.3: Flood Zonation for Balbriggan



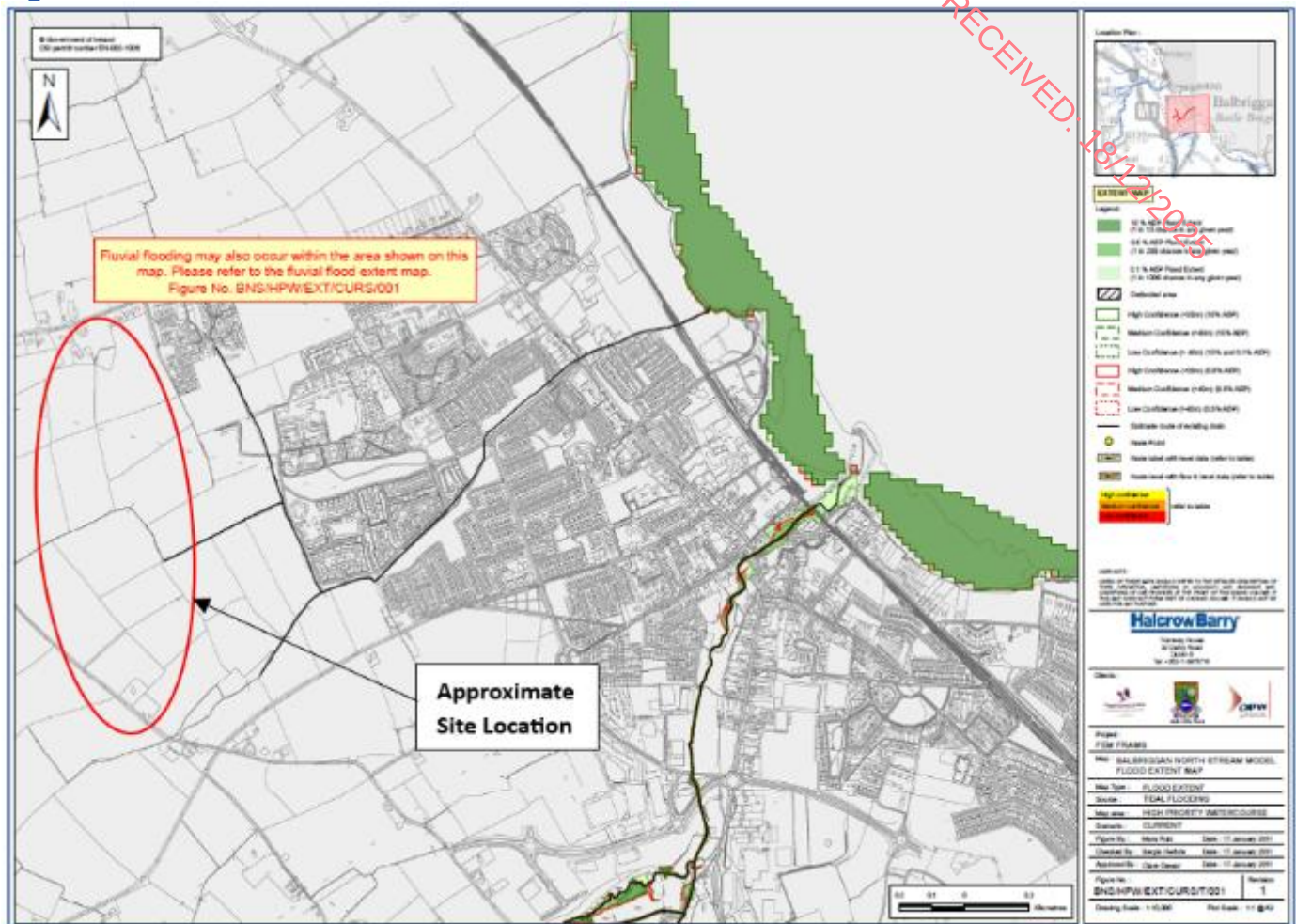
(Fingal County Council Strategic Flood Risk Assessment (2023))

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Figure 6.5: CFRAM Coastal Flood Extend



(OPW/Floodinfo.ie, 2025)

Figure 6.6. Coastal Flood Risk Extent

(Hallcrow Barry Limited-Fingal County Council, 2011)

6.3.6.2 Pluvial

Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off can enter a watercourse or sewer. It is usually associated with high intensity rainfall and typically occurs in the summer months. The SFRA Indicative Pluvial Flood Maps were also reviewed. No pluvial flood risk for the site or vicinity was identified.

6.3.6.3 Groundwater

Groundwater is the water that soaks into the ground from rain and can be stored beneath the ground. Groundwater floods occur when the water stored beneath the ground rises above the land surface. Groundwater flooding can be due to high water tables and increased recharge following extended periods of wet weather and usually associated with the karst areas of the west of Ireland. An analysis of datasets available online through GSI Mapping was undertaken to determine the potential for groundwater flooding. According to GSI Groundwater Flooding Probability mapping, the site lies outside the groundwater low, medium and high probability flood zone extents, and therefore resides in flood zone C for groundwater flooding. The Groundwater Data Viewer shows no indication of any karst features within the site boundary.

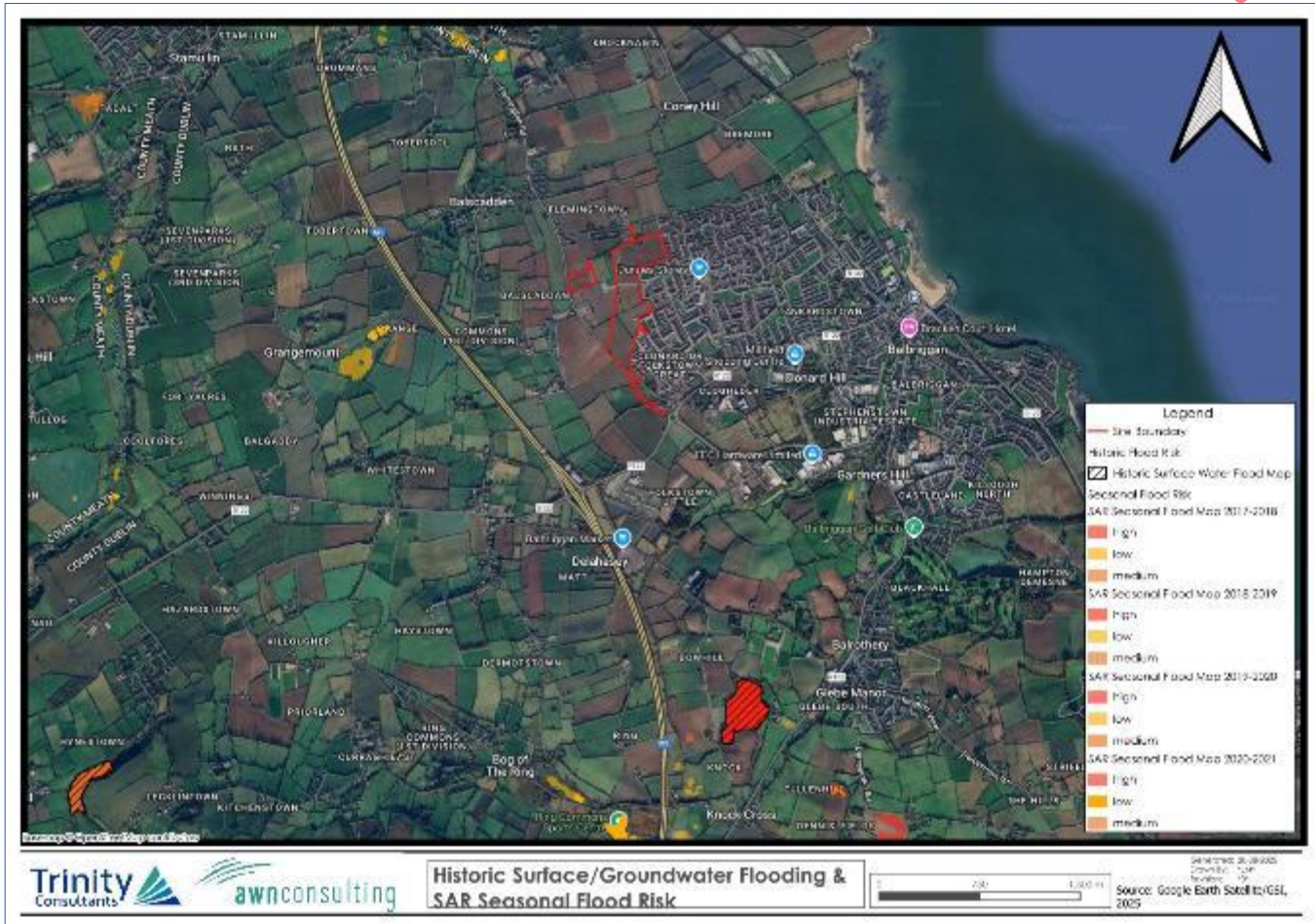
6.3.6.4 SAR Seasonal

The Synthetic Aperture Radar (SAR) Seasonal Flood Maps shows observed peak flood extents which took place between Autumn 2015 and Summer 2021. The maps were made using Synthetic Aperture Radar (SAR) images from the Copernicus Programme Sentinel-1 satellites. SAR systems emit radar pulses and

record the return signal at the satellite. Flat surfaces such as water return a low signal. Based on this low signal, SAR imagery can be classified into non-flooded and flooded areas. Flood extents were created using Python 2.7 algorithms developed by Geological Survey Ireland.

Review of the SAR seasonal flood extents indicates that the site extent and the immediate vicinity does not contain SAR Seasonal flood extent zones i.e. the development site boundary is devoid of any SAR Seasonal flood extent zones (refer to figure 6.7 below).

Figure 6.7: Historical Surface/Groundwater Flood Extents & SAR Seasonal Flood risk extents



6.3.7 AREAS OF CONSERVATION

According to the NPWS (2025) on-line database there are no special protected areas (SPA) or special areas of conservation (SAC) on or within the boundary of the proposed development site. The lands in which the development is located have no formal designations.

In addition, there is a potential indirect hydrological pathway / connection to nationally designated sites in North-West Irish Sea via the Clonard Brook Stream and Bremore River which flow in an east/northeasterly direction before its outfall to the Irish Sea. The relevant natura 2000 site is:

- North-West Irish Sea SPA (Site Code: IE004236) c. 1.7 km to the east of the site.

It is noted that based on the significant distance and dilution (mixing) factor downstream/downgradient in the catchment and along the potential pathway to these receptors there is no likelihood of an accidental release of hydrocarbons or silt from the proposed development resulting in any change in surface water quality contributing to these habitats.

Figure 6.8: Designated Areas (Natura 2000 Conservation / Protected Sites)



6.3.8 RATING OF IMPORTANCE OF HYDROLOGICAL ATTRIBUTES

Based on the TII methodology (2009) (refer to Volume III of the EIAR [Appendix C - 6.1) the importance of the hydrological features at this site is rated as 'Medium' importance based on the assessment that the attribute has a hydrological connection with protected European Sites and the attribute has a medium/moderate quality or value on a local scale. The lands are not an area of water supply, within a flood zone or an amenity area.

There is an objective (WFD) to maintain Good status or not impact on programme of measures to achieve Good status of this surface water receptor (Bremore River / Clonard Stream / Matt_010) during construction and operation.

6.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

In summary, the proposed development will consist of the following:

- Construction of 815 no. dwellings, open space, community/retail floorspace and 2 no. creches on an overall site area of 24.91 hectares.
- The development includes the provision of C-Ring Road to link into the existing R122 roundabout with vehicular access also from the Boulevard, Hamlet Lane, & Flemington Lane.
- Provision of surface water attenuation measures, connection to water supply, provision of foul drainage infrastructure to Irish Water specifications and all ancillary site development, construction, and landscaping works;
- The proposed development includes a SuDS drainage design, boundary treatments, lighting, servicing and utilities, signage, and associated and ancillary works, including site development works above and below ground. All ancillary site development, landscaping and construction works to facilitate foul, water and service network connections.
-
- Refer to chapter 2 – Description of the proposed development for further detail.
-

In relation to hydrology the relevant characteristics are as follows:

- Increase in hardstanding.
- Provision of underground attenuation tanks and associated infrastructure as part of the surface water systems along with installation of bypass hydrocarbon / petrol interceptors.
- All ancillary site development, landscaping and construction works to facilitate foul, water and service network connections.

Construction Phase

The key civil engineering works which relate to the land, soil geology, and hydrogeological environment during construction of the proposed development are summarised below:

- During the construction phase, excavated soil and stones (c. 75,038 m³) will be generated from the excavations required to facilitate site levelling to the necessary base level and construction of new foundations. It is anticipated that c. 19,507 m³ of this excavated soil and stone will be reused on site. It is anticipated that c. 55,531 m³ of excavated material will subsequently need to be removed off site and disposed of at a fully authorised soil recovery facility.
- Storage of aggregate materials such as sands and gravels will be stored in clearly marked receptacles in a secure compound area within the contractors' compound on site. Temporary storage of spoil will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment and solid matter. Any excavated material temporarily stockpiled onsite for re-use during reinstatement will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc. There will be a requirement for deliveries of imported engineering fill (sands and gravels), and other construction materials including, steel structure, concrete, cladding, ducting and piping. Construction materials will be brought to site by road. Soil requiring removal offsite will be removed from site regularly to ensure there is minimal need for stockpiling. Some of the topsoil will be re-used on site for backfill (levels in some areas need to be raised) and landscaping with some export required. Any surplus topsoil material will be transported off site and disposed of at a fully authorised soil recovery facility / site.
- Temporary storage of fuel required on site for construction traffic will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage.

- Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site.

Operational Phase

There will be an increase in hardstanding and a resultant increase in run-off rate for storm water (which will be fully attenuated) due to the proposed development. The proposed development characteristics which relate to the water and hydrological environment during operation of the proposed development are summarised below:

6.4.1.1 Proposed Surface Water Drainage

In accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the proposed development shall restrict the stormwater run-off to greenfield run-off rates or Qbar rate. The new development will comprise a separated drainage system, wherein the vast majority of surface water will be attenuated on site for up to a 1 in 100-year storm event plus an additional 20% allowance for climate change in line with DCC Drainage Division guidelines.

The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. The drainage network will be served by 5No. catchment attenuating to the green-field runoff at the hydrobrake located in the outfall manhole from each attenuation system (refer to Figure 6-8 below). The last hydrobrake manhole has been allowed for the 50l/s attenuated flow coming from the catchment 02, as part of the Planning application for Taylor Hill, Balbriggan, Phase 3.

The proposal is acceptable subject to all SuDS systems being in accordance with the Cira document C753 'The Suds Manual', no surface water or rainwater discharging into the foul water system under any circumstances, and the surface water drainage complying with the "Greater Dublin Regional Code of Practice for Drainage Works, Version 6.0", FCC, April 2006.

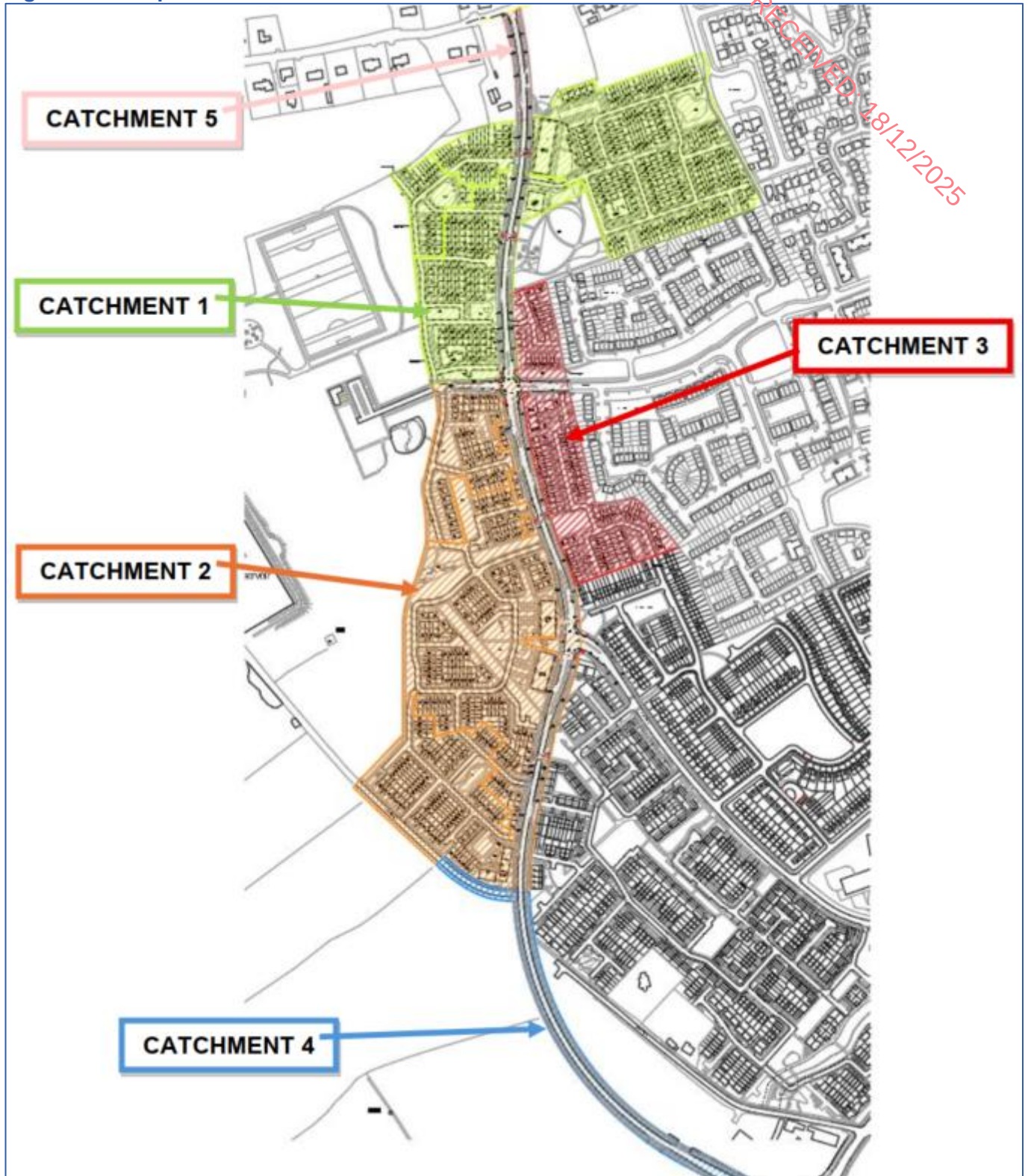
There are 5No. surface water connection points for this site which it will be into the Flemington Lane at the north boundary of the site, on the Flemington Park at northeast of the boundary, at existing Taylor Hill Terrace, at the north of the Boulevard Road with allowance of 50l/s as part of the granted permission from Taylor Hill Phase 3A, 3B & 3C and to the last connection to the existing Roundabout at R122.

The drainage strategy / arrangement will follow and comply with the following design standards:

- The Greater Dublin Strategic Drainage Study (GDSDS), Volume 2.
- The Greater Dublin Regional Code of Practice for Drainage Works.
-

The proposed Surface Water Management Plan is in line with the key requirements of the Dublin City Council Drainage Division Planning & Development Control Section. The proposed surface water drainage system takes cognisance of the Fingal County Council Development Plan 2023 – 2029 with respect to SuDS. The proposed SuDS measures provide a minimum of two stage treatment train approach including interception and primary and secondary treatment of surface water run-off. This treatment approach is in line with The CIRIA SuDS Manual C753 and is outlined below.

Figure 6.9: Proposed Catchment Areas



In accordance with the requirements of Dublin City Council, the proposed surface water drainage system designed for this development includes / incorporates a number (multitude) of Sustainable Urban Drainage Systems (SuDS) measures which serve a dual purpose in managing stormwater and will be incorporated to reduce run-off volumes and improve run-off water quality. The proposed SuDS mechanisms will comprise the following:

- Bioretention areas / Systems
- Tree Pits
- Modular Permeable paving
- Silt Traps
- Swales
- Detention Basin
- Petrol (Hydrocarbonds) Interceptor – Prior to out falling into main system
- Hydrobrake flow control – prior to out falling into the main system.
- Stormtech Underground Attenuation Storage

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For the drawings which depict the proposed drainage designs layout and further details on the proposed drainage design, refer to the Engineering Services Report, prepared by Paul McGrail Consulting Engineers Limited (2025), included as part of this Application.

6.4.1.2 Proposed Foul (Wastewater) Water Drainage

Strict separation of surface water and wastewater will be implemented within the development. The proposed development will be fully serviced with separate foul and stormwater sewers which will have adequate capacity for the facility and discharge limits as required by Irish Water licensing requirements.

The internal foul network has been designed in accordance with Irish Water Code of Practice for Wastewater Infrastructure. The proposed development will have 6No. of discharge points for the to an existing 225, 300 and 375 diameter foul sewer at Flemington Park, Hamlet Lane and Boulevard Road, respectively.

The foul water from the development will discharge via soil vent pipes within the buildings by gravity flow before connecting into the existing separate foul sewer network within the development. The foul sewerage for each house will have a separate connection to the proposed 225mm and 150mm diameter foul sewer along the road.

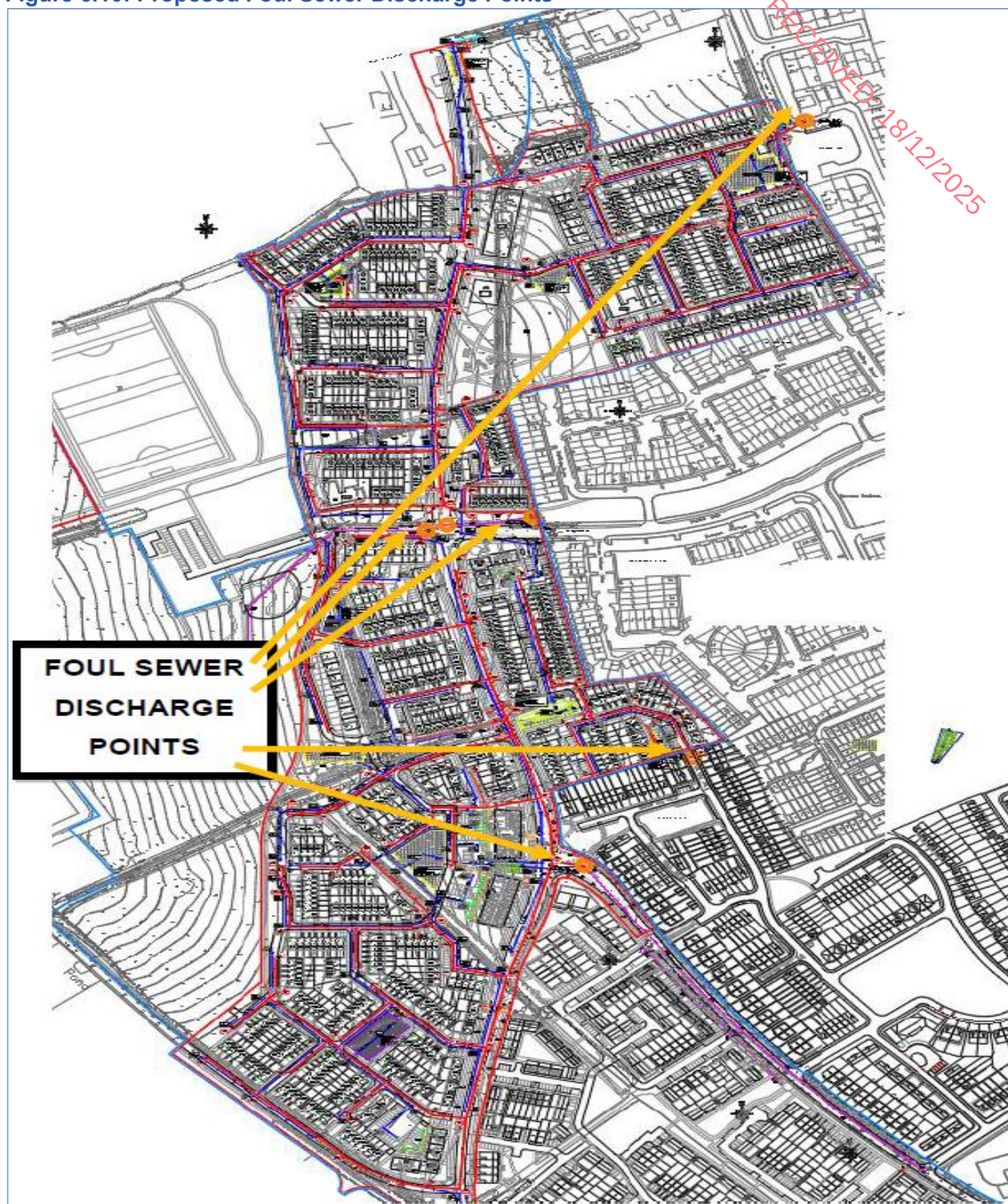
A Pre-Connection Enquiry has been submitted to Uisce Eireann Confirmation of Feasibility is included in this application. Refer to Appendix B of the Engineering Services Report, prepared by Paul McGrail Consulting Engineers Limited (2025), included as part of this Application.

It is calculated that the proposed development will have a total hydraulic loading of 12500 L/day of foul effluent generated during the operational phase of the development. This equates to an average flow of 0.145 litres/second (based on 8-hour occupancy) and a peak flow of 0.651 litres/second.

The foul discharge from the site will join the public sewer and will be discharged and treated at the Balbriggan Water Wastewater Treatment Plant (WWTP, D0023-01) prior to subsequent discharge to Northwestern Irish Sea coastal waterbody. This WWTP is required to operate under an EPA licence and meet environmental legislative requirements as set out in its licence.

There is an indirect hydrological connection to the North-West Irish Sea SPA, via treated foul wastewater arising at the site from the Balbriggan WWTP (EPA Licence :D0023-01).

There is no 'direct' pathway for foul sewage to any receiving water body (as identified above). There is an indirect hydrological connection to the North-west Irish Sea SPA, via treated foul wastewater arising at the site from the Balbriggan WWTP (EPA Licence :D0023-01). However, as the WWTP is required to operate in compliance with licence requirements, there is no potential for water quality exceeding SI threshold concentrations to be exceeded at the North-West Irish Sea.

Figure 6.10: Proposed Foul Sewer Discharge Points

6.5 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section details the potential impacts to land, soil and groundwater associated with the proposed development. As outlined below the activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the geological and hydrogeological

environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the proposed development.

6.5.1 DO-NOTHING IMPACT

There are no predicted impacts should the proposed development not proceed. If the proposed development were not to go ahead (i.e., in the Do-Nothing scenario) there would be no excavation or construction or operational impact at this site. There would, therefore, be a **neutral** effect on the land, geological and hydrogeological environment.

The site is zoned for residential development, and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies and, therefore, the likely effects would be similar to this proposal, as described in the following sections.

6.5.2 CONSTRUCTION PHASE

6.5.2.1 Potential Impacts on Surface Water Quality

Land clearing, earthworks and excavations for foundations and services will necessitate the removal of vegetation cover and the excavation of soil and subsoils. As a result, there is potential for run-off water to become contaminated with pollutants/silt released during construction activity. If not mitigated, contaminated water can pose a temporary risk to the onsite field drainage ditches and the downstream catchment comprising main hydrological features which include the Bremore River and its tributaries, the Clogheder Stream and Clonard Brook Stream.

During construction of the development, the potential of contamination is associated with the following sources:

- Suspended solids (muddy water with increased turbidity (measure of the degree to which the water loses its transparency due to the presence of suspended particulates)) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms. Construction phase sewerage will be taken by tanker off site for disposal at a licensed waste management facility.

Based on the distance of separation to Natura sites (pathway length) and the significant dilution factor downstream in the catchment, there is no likelihood of an impact on the surface water quality in the Bremore River Waterbody or Natura sites (North-West Irish Sea SPA).

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality are **negative, significant** and **temporary**.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality and status of the Natura 2000 sites of interest (North-West Irish Sea SPA) are **imperceptible** and **temporary**.

6.5.2.2 Potential Impacts on Surface Water Flow and Quantity

The gradual introduction of impermeable surfaces and the compaction of soils across the construction site as a result of the land clearing and earthworks will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water

run-off which could potentially impact local drainage if not adequately attenuated. This increase in the rate and volume of direct surface run-off can result in increased sediment loading, scouring impacts on local drainage and watercourse.

Based on the pathway distance to Natura 2000 site and significant dilution factor (and mixing) downstream in the catchment and North-West Irish Sea, and the contribution from multiple other watercourses downstream would make the development impacts on flow insignificant. Therefore there is no likelihood of an impact on the surface water flow in the Bremore River and its tributaries, the Clogheder Stream and Clonard Brook Stream or North-West Irish Sea SPA Natura 2000 site.

In the absence of mitigation measures the potential impacts during the construction phase on surface water quality and flow are **negative, not significant** and **short term**.

6.5.2.3 Potential Impacts on Human Health and Population

A reduction in water quality via unmitigated pollutants entering the stream or surface waterbody has the potential to lead to negative impacts on human health and populations. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Clogheder Stream, Clonard Brook Stream and the Bremore River.

Without the consideration of mitigation measures, the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are **neutral, imperceptible** and **short term**.

6.5.2.4 Potential Impacts on Water Framework Directive Status

There is a potential of localised accidental discharges during the construction phase (as set out in Section 6.5.1). However, these are temporary short-lived events that will not impact on the surface water status of the Clogheder Stream, Clonard Brook Stream, Bremore River river waterbodies or the downstream Northwestern Irish Sea coastal waterbody and as such will not impact on trends in water quality and overall WFD status assessment.

There is no potential impact on Water Framework Directive status or Programme of Measures to achieve good status.

Even in the absence of mitigation measures, the potential impact on Water Framework Directive status of the Clogheder Stream, Clonard Brook Stream, Bremore River waterbodies or the downstream North-West Stream coastal waterbody or their respective potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and third RBMP 2022-2027 during the construction phase is considered to be **negative, imperceptible** and **short term (temporary)**.

6.5.2.5 Overall Impact of Construction Phase

Without the consideration of mitigation measures, the construction phase of the proposed development will likely have a **negative, short-term, slight** impact without mitigation in place.

6.5.3 OPERATIONAL PHASE

6.5.3.1 Potential Impacts on Surface Water Quality

The proposed development incorporates a sustainable drainage system that is to be integrated with the development's landscaping features and comprises a combination of multiple measures in relation to flow control, interception storage, attenuation storage and catchment conveyance features. In addition, petrol / hydrocarbon interceptors are included within the network to treat any localised spill prior to discharge off

site. Refer to Proposed Drainage Layout drawings included with this Application for details of the proposed surface water (stormwater) network.

A sustainable urban drainage system (SuDS) approach to stormwater management will be used throughout the site where possible. The overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, thereby reducing pollutant concentrations in stormwater.

There is no requirement for bulk oil / fuel storage or loading onsite. Surface water runoff from roads, car parking areas can potentially contain slightly elevated levels of contaminants such as hydrocarbons which will be collected within on-site drainage and treated in petrol (hydrocarbon) interceptors with no resultant impact on the local drainage network and the downstream Clogheder Stream, Clonard Brook Stream, Bremore River and Northwestern Irish Sea coastal waterbody.

Even without treatment at the Balbriggan WWTP, the peak foul effluent discharge, calculated for the proposed development as 0.651 l/s (which would equate to 0.116% of the licensed discharge at Balbriggan WWTP [peak hydraulic capacity]), would not have a measurable impact on the overall water quality within North-West Irish Sea SPA and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive). The Balbriggan WWTP has capacity for the above proposed peak foul effluent. The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity. According to the latest AER (Annual Environmental Report) for Balbriggan WWTP, the capacity of the facility will not be exceeded (within the next 3 years) before 2027 (AER, 2024).

This assessment is supported by hydrodynamic and chemical modelling within Northwest Irish Sea which has shown that there is significant dilution for contaminants of concern (DIN and MRP). This modelling indicates that while some localized areas may experience elevated nutrient levels (DIN and MRP), there is significant dilution overall. The models predict that for many scenarios, particularly those without specific discharges, the water quality improves substantially, and that for discharges, the impact is generally confined to a small mixing zone around the outfall, with quality often returning to good or high status outside this area.

The most recent water quality assessment of the Northwestern Irish Sea WFD coastal Waterbody undertaken by the EPA (Water Quality in 2019-2024) also shows that North-west Irish Sea on the whole, currently has an 'Good' water quality status (refer to www.catchments.ie).

As such this flow and treatment at Balbriggan WWTP would not have a measurable impact on the overall current water quality and Water Body Status within the Northwestern Irish Sea Coastal Waterbody and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).

In the absence of mitigation measures the potential impacts during the operational phase on surface water quality are **negative, not significant** and **long-term**.

6.5.3.2 Potential Impacts on Surface Flow and Quantity

The surface water drainage from the proposed development site has been designed with bioretention areas, tree pits, attenuation tanks, detention basins and flow control devices (hydrobrake) to ensure that there is no increase in flow rates and volumes, from the development site, being discharged to the receiving infrastructure and waterbodies; thus, causing no adverse impact on adjoining and other downstream properties.

The proposed project is located within Flood Zone C, which indicates low flood risk. The design of the development and drainage infrastructure will ensure that, in accordance with Greater Dublin Strategic Drainage Study (GDSDS), the proposed development shall restrict the stormwater run-off to Qbar greenfield run-off rates. Surface water runoff exceeding the allowable outflow rate for the catchment will

be stored in underground attenuation tanks for rainfall events up to a 1 in 100-year return period, with an allowance for climate change of 20%.

The proposed increase in hardstanding area (c. 5.26 Ha / 52,600m²) has the potential to resulting in increase in run-off from the site if attenuation on site is not adequately designed. The resultant increase in run-off from the proposed increase in hardstanding area has been mitigated by attenuation on site.

As previously discussed in Section 6.5.3.1 above, a review of the Balbriggan Annual Environmental report (AER, 2024) confirmed that there is adequate capacity for foul water. As the stormwater and foul water will be separated on site, the Proposed Development will not contribute any additional stormwater drainage to the WWTP.

With design measures in place, the impact on surface water flow and quality are **neutral, imperceptible, and long-term**.

6.5.3.3 Potential Impacts on Human Health and Population

A reduction in water quality via unmitigated pollutants entering the onsite local drainage ditches, Bremore River or its tributaries, the Clogheder Stream and Clonard Brook Stream (as set out in Section 6.5.3.1) has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Clogheder Stream, Clonard Brook Stream and Bremore River. However, as yet unknown recreational, bathing or surface water abstractions may exist.

The potential for unmitigated off-site flooding as a result of the increased hardstanding areas will not have potential to impact on human health, populations, and material assets.

In the absence of mitigation measures the potential impacts during the operational phase on human health and populations due to changes to the hydrological environment are **negative, not significant and long term**.

6.6 MITIGATION MEASURES

The design has taken account of the potential impacts of the development on the hydrological environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding water bodies. This section outlines the measures that will be employed in order to minimise the impact on land, soils, and groundwater of the proposed development.

6.6.1 CONSTRUCTION PHASE

A Preliminary Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by Paul McGrail Consulting Engineers Ltd, included with the application documentation and contained in this EIAR (see Appendix D, Volume III of the EIAR). It contains the best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, as well as any additional measures required pursuant to planning conditions which may be imposed. This document outlines the best practice construction techniques and methodologies which will be implemented onsite during construction of the proposed development including measures to protect waterbodies. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the CEMP and this EIAR will be employed on site during the construction phase.

The CEMP and mitigation measures set out in this EIAR as well as the NIS will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions

change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA, 2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

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

According to the subject CEMP, all existing surface water drainage elements shall be maintained free from waste materials generated during the construction of the proposed development, including the initial site clearance and excavation. Routine visual inspections by the contractor shall reduce any risk of excess construction materials causing obstructions to surface water drainage and any potential flooding occurring. A maintenance schedule and operational schedule must be established by the contractor for silt and pollution control measures during the construction period. This should be undertaken in consultation with the relevant statutory authorities.

The CEMP provides actions and measures which will be undertaken for the purpose of environmental management and pollution prevention during the construction phase. As there is potential for run-off to indirectly discharge to the local drainage network consisting of drainage ditches which convey flow and discharge to the Bremore River (and its tributaries, the Cloghader Stream and Clonard Brook Stream). In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- SuDS will be constructed in line with manufacturer's guidelines / best practice methods.
- Foul drainage from site offices and compound, 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.
- Process water used during construction will be disposed of appropriately. Rainwater will also accumulate on the site during construction. This water will be discharged directly via suitable pollution control and attenuation measures either directly to ground within the site or to foul sewer systems via portions of the existing wastewater network.
- Where available proposed permanent connections to the public sewer systems required for the operational phase may be used temporarily for the construction phase, to optimise efficiencies and avoid the creation of new outfalls for temporary construction only.
- A Construction Drainage Control System will be put in place so that all silt laden water will be diverted to temporary settlement storage tanks prior to discharge. This discharge, and the associated pollution control measures, will be subject to the approval of the Local Authority.
- Temporary construction surface drainage and sediment control measures, including the use of SuDS, will be provided before earthworks commence. The drainage design follows the natural topography of the site and utilises petrol/hydrocarbon/oil interceptors, silt traps along all gullies, house inspection chambers and SuDS manholes. Accordingly, all discharges to surface waters will be suitably treated through silt remediation (silt traps) and petrol/hydrocarbon/oil interceptors prior

to discharge. There will be no direct discharge of surface water from any element of the works without proper attenuation and treatment.

- Pipe systems and orifices will be checked for blockages or partial blockages.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site.
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.

6.6.1.1 Run Off & Suspended Solids

Rainfall at the construction site will be managed and controlled for the duration of the construction works until the permanently intercepted and attenuated surface water drainage system of the proposed site is complete. In the meantime, rainwater will continue to discharge to ground as current.

- It is anticipated that there will be 10m minimum buffer zone to the water course which on the site which comprise field drainage ditches (no main water courses / river waterbodies exist within the extent of the site boundary).
- Run-off from the working site or any areas of exposed soil shall be channelled and intercepted at regular intervals for discharge to silt remediation / settlement measures. A temporary positive drainage system shall be installed prior to the commencement of the construction works, to collect surface water runoff from the site during construction. A temporary surface water management will throttle runoff and allow silt and suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to discharge directly to the local drainage network.
- Water contaminated with silt will not be allowed to enter a watercourse or drain as it can cause pollution. All parts of the drainage system will be protected from construction runoff to prevent silt clogging the system and causing pollution downstream. Silt reduction measures to prevent this include, early construction of sediment management basins, channelling runoff away from watercourses and surface water drains and erosion prevention measures. Following construction, subsoil that has been compacted during construction should be broken up prior to the re-application of topsoil to reinstate the natural infiltration performance of the ground.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Silt deposited during construction will be removed.
- Soils will be stabilised and protected from erosion whilst planting becomes established.
- Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plants and machinery will also be carried out in bunded areas to minimise risk of any potential pollutants being discharged from the site.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Foul drainage from site offices and compound, 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.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar with the emergency procedures and use of the equipment.

- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- Silt reduction measures on site and settlement measures (e.g. silt traps and settlement tanks/ponds or equivalent);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Construction materials, including aggregates etc. will be stored a minimum of 50-meter buffer distance from any surface water bodies and surface water drainage points.
- Aggregate materials such as sands and gravel will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

6.6.1.2 Wastewater Management

Foul drainage from site offices and compound, 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.

6.6.1.3 Cement /concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Irish Water / FCC.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6.1.4 Hydrocarbons and other construction chemicals

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

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowsters are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsters to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognized standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

6.6.1.5 Human Health and Population

It has been established (Section 6.3.3) that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Clonard Brook stream, Clogheder Stream or the Bremore River. On a precautionary basis, the mitigation measures set out above in Section 6.6 will be implemented during the construction works for the protection of human health and populations.

6.6.1.6 Human Health and Population

It has been established (Section 6.5.2) that while, there is a potential of accidental discharges during the construction phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures previously set out in Section 6.6 above, will be implemented during the construction works for the protection of surface water status and achievement of the programme of measures.

6.6.2 OPERATIONAL PHASE

6.6.2.1 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption.

The proposed development design includes hardstand cover across the site, and the stormwater drainage network design includes sustainable drainage systems (SuDS). These measures by design ensure the stormwater leaving the site is to be attenuated and treated within the new development site boundary to ensure suitable quality, before discharging to the Clonard Brook stream, which subsequently outfalls to the nearby Bremore River.

Any localised car leaks will therefore be intercepted by and discharge to the proposed surface water / stormwater drainage network and be treated in Petrol interceptors (oil separators) prior to outfalling into the main system and downstream catchment. Therefore, the risk of accidental discharge has been adequately addressed through design. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. The SuDS design is set out in the Engineering Services Report (2025) and uses above-ground storage detention basins (interception system), underground attenuation storage, bioretention systems, flow control devices (Hydrobrake), grass swales, modular permeable paving (porous surfacing), and petrol (hydrocarbon) interceptors.

The proposed SuDS measures will reduce the risk of flooding downstream of the subject site. The purpose of the SuDS design is to:

- Treat runoff and remove pollutants to improve quality;
- Restrict outflow and to control quantity;
- Increase amenity value.

The proposed development does not include for any bulk chemical storage including fuel storage. As the site will be paved and drained, any fuel spills from cars will drain to the petrol (hydrocarbon) interceptors on the stormwater drainage system. All stormwater drainage is through the permitted attenuation.

According to Fingal 2023-2029 Strategic Environmental Assessment (SEA), objective IUO26 states developments must 'ensure a minimum 10m wide riparian buffer strip measured from the top of the bank either side of all watercourses', which applies to lands within development boundaries as per FCC. A riparian buffer along the Clonard stream has been established and landscaped as part of the Balbriggan Phase 4 residential development. This will improve the flow and habitat characteristics of the stream both on and off site. The riparian zones will be fisheries compliant and will contain features for biodiversity enhancement.

The layout of the proposed surface water drainage network is shown on Paul McGrail Consulting Engineers Ltd (2024) Drawing Set included with this Application. It is proposed to strictly separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the surface water and wastewater sewer networks respectively.

6.6.2.2 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water flow; measures have been incorporated in the design to mitigate these potential impacts.

As set out in the Engineering Services Report (2025), flow restriction is achieved by means of a hydro-brake installed at the outfall of each surface water catchment within the development, with the excess storm water stored on site for the duration of the storm periods of up to 1 in 100 years. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100-year event to the detention basins and underground attenuation storage without any overland flooding.

Surface water runoff exceeding the allowable outflow rate for the catchment will be stored in detention basins for rainfall events up to a 1 in 100-year return period with an allowance for climate change of 20%. The proposed development includes a new surface water network which will mitigate any potential for pluvial risk to the site in line with SuDS measures.

6.7 RESIDUAL IMPACTS

6.7.1 CONSTRUCTION PHASE

6.7.1.1 Hydrology

The implementation of the mitigation measures outlined above in Section 6.6 of this chapter will ensure that targeted rates of impact to hydrology (Quality, Quantity and Flow) are achieved at the site of the Proposed Development during construction and operational phases. When mitigation measures are implemented throughout construction the predicted impact on the environment will be short-term, imperceptible, and neutral. With the measures outlined in the EIAR and CEMP, the predicted impact will be **neutral, imperceptible, and short-term**.

6.7.1.2 Human Health and Population

The implementation of the mitigation measures outlined in Section 6.6 of this chapter will ensure that the potential impacts on human health and populations during the construction phase are adequately mitigated. The residual effect on during the construction phase is considered to be **neutral, imperceptible, and short-term**.

6.7.1.3 Water Framework Directive

Even in the absence of the mitigation measures detailed above in Section 6.6, there will be no predicted degradation of the current Cloghader Stream, Clonard Brook Stream, Bremore River and North-West Irish Sea (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of river and coastal waterbodies and as such will not impact on trends in water quality and over all status assessment.

The residual effect on Water Framework Directive Surface/Rive and Coastal waterbodies during the construction phase is considered to be **neutral, imperceptible and short-term**.

6.7.2 OPERATIONAL PHASE

6.7.2.1 Hydrology

The implementation of the mitigation measures detailed above in Section 6.6, will ensure that the potential impacts on hydrology (Quality, Quantity and Flow) once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water quality, quantity and flow during the operational phase is considered to be **neutral, imperceptible, and long-term**.

Following the TII criteria (refer to refer to Volume III of the EIAR [Appendix C 6.1 of the EIAR]) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

6.7.2.2 Human Health and Population

The implementation of the mitigation measures detailed above in Section 6.6, will ensure that the potential impacts on human health and populations once the proposed development is constructed and operational are adequately mitigated. The residual effect on human health and populations during the operational phase is considered to be **neutral, imperceptible, and long-term**.

6.7.2.3 Water Framework Directive Status

There is no potential for adverse or minor temporary or localised effects on the Cloghader Stream, Clonard Brook Stream, Bremore River and North-West Irish Sea as a result of the Proposed Development. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third RBMP 2022-2027.

Even in the absence of the mitigation measures detailed in Section 9.6, there will be no predicted degradation of the current surface waterbodies (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the third RBMP 2022-2027.

There are appropriately designed mitigation and design measures which will be implemented during the construction and operation phase to protect the hydrogeological environment. There is a potential of accidental discharges during the construction and operational phases, however these are temporary short-lived events that will not impact on the water status of underlying aquifer long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on Water Framework Directive Surface waterbodies bodies (River & Coastal) during the construction phase is considered to be **neutral, imperceptible and long-term**.

6.8 MONITORING /REINSTATEMENT

The management of land, soils and ground water during the construction phase will be monitored by the Contractor to ensure compliance with above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

6.8.1 CONSTRUCTION PHASE

During construction phase the following monitoring measures will be implemented:

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off to surface waterbodies and drainage ditches which comprise the local drainage network; and
- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Pouring of cement-based materials for works will only be carried out in dry conditions.
- Regular inspection of surface water run-off and sediments controls (e.g., settlement & silt remediation measures e.g. silt traps / distilling tanks).

6.8.2 OPERATIONAL PHASE

No future surface water monitoring is proposed for the proposed development due to the low hazard potential at the site.

Hydrocarbon / petrol interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions.

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges the local surface water drainage network / catchment.

6.9 INTERACTIONS

Due to the inter-relationship between land, soils, geology, hydrogeology and hydrology, the assessed impacts and mitigation measures discussed will be considered applicable to both chapters.

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIA. The main interactions of importance to land, soils, geology, and hydrogeology relate to Biodiversity (Chapter 4), Land Soil Geology & Hydrogeology (Chapter 5), and Air Quality (Chapter 7) as follows:

6.9.1 BIODIVERSITY

The proposed development may have temporary negative impacts on biodiversity at site level during construction with resultant impact on local biodiversity. It will not impose any significant impact on European Designated sites due to the treatment integrated in the surface water (stormwater) and foul (wastewater) drainage strategy and associated mitigation measures (as previously outlined in section 6.6 of Chapter 6- Hydrology) coupled with the large distance involved in the pathway and significant dilution factor downstream in the catchment and the Northwest Irish Sea. Therefore, there is no potential for impacts on water quality within European Designated sites.

6.9.2 LAND, SOIL, GEOLOGY, AND HYDROGEOLOGY

As mentioned above, there is a close inter-relationship between land, soils, geology, hydrogeology (Chapter 5) and Hydrology. During construction of the proposed development, there will be soil excavation that could impact surface water quality if not adequately mitigated. There will be a reduced recharge to the underlying aquifer due to hard cover and installation of a drainage system.

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and Hydrology during the operational phase.

6.9.3 CLIMATE AND FLOOD RISK

The proposed development will not have negative impact on flood risk as a result of climate change. The proposed development is located within Flood Zone C. The proposed drainage plan incorporates adequate attenuation taking consideration of a climate safety factor.

6.9.4 AIR QUALITY

During construction of the proposed development, there will be a proportion of dust created during construction enabling works and construction activities that could impact air quality if not adequately mitigated.

6.9.5 WASTE

Excavation could result in encountering contaminated soil which has the potential to runoff to surface waterbodies (i.e. onsite field drainage ditches) via overland flow if not adequately mitigated. This will undergo environmental testing and be disposed of at a suitable licenced waste facility as required.

6.9.6 INDIRECT AND/OR SECONDARY IMPACTS

The proposed development requires excavation works which if not managed appropriately could give rise to the generation of dust.

In accordance with EPA Guidelines (2022), secondary or indirect impacts refer to environmental effects that occur away from the project site or through complex impact pathways. Having regard to the nature, scale and location of the proposed residential development, and the specific works involved during construction and operation, there is no potential for significant indirect or secondary impacts on hydrology. The development does not rely on functionally interdependent activities occurring off-site that would give rise to such effects.

6.10 CUMULATIVE IMPACTS

A list of developments in the vicinity of the subject lands is contained in Chapter 17 of this EIAR. All cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such, any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

6.10.1 CONSTRUCTION PHASE

There are existing residential and commercial developments close by, along with the multiple permissions in the area. This chapter has been prepared with reference to the list of other developments in the locality.

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

Surface water contamination due to accidental hydrocarbon/cement leakage to ground and runoff / overland flow to surface waterbodies.

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation (refer to Appendix D, Volume III of the EIAR). This together with the mitigation measures set out in Section 6.6 outlines the best practice construction techniques and methodologies which will be implemented during construction of the proposed development to minimise potential for contamination.

The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The works contractors for other planned or permitted developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022).

The implementation of mitigation and monitoring measures detailed in Section 6.6; and 6.8 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there

will be minimal cumulative potential for change to the hydrological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and short-term**.

6.10.2 OPERATIONAL PHASE

In relation to the potential cumulative impact on hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localized reduced recharge to ground and increase in surface run-off;
- Increased risk of minor accidental discharge of hydrocarbons from car parking areas and along roads is possible unless diverted to surface water system with petrol interceptor;

Increase in wastewater loading and water supply requirement is an impact of all development. Each development will require approval from the Uisce Eireann (formerly IW, Irish Water) confirming available capacity in the water and wastewater infrastructure. The surface water and foul drainage infrastructure and water supply requirements for the proposed development have been designed to accommodate the proposed development and a confirmation of feasibility received.

All nearby developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022)).

The implementation of mitigation measures detailed above in Section 6.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and long-term**.

6.11 DIFFICULTIES ENCOUNTERED

There were no significant difficulties encountered in compiling the specified information for this EIA Chapter.

6.12 SUMMARY

There will be **no long-term residual impact** on hydrological receptors, either within or in the vicinity of the proposed development as a result of the proposed development.

6.13 REFERENCES

- Environmental Protection Agency Act 1992 as amended.
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022).
- Eastern Regional Fisheries Board (2006). Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.

- Department of Communications, Climate Action, and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- Fingal County Council (FCC), Fingal County Council Development Plan 2023-2029.
- Fingal Development Plan 30.08.2023 Version 4- Written Statement.
- Fingal 2023-2029 Strategic Environmental Assessment (SEA).
- BS 5906:2005 Waste Management in Buildings – Code of Practice.
- Floodinfo.ie, Predictive Flood Mapping (CFRAM) database (OPW,2025)
- Uisce Éireann- Balbriggan WWTP (D0023-01) AER 2024.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.
- EPA (2025). EPA Maps.
- GSI (2025). GSI Map Viewer.
- NPWS (2025). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- National Roads Authority (NRA) (2009). Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- OPW (2025). Flood Maps.
- OPW (2009). The Planning System and Flood Risk Management: Guidelines for Planning Authorities.

7.0 AIR QUALITY

7.1 INTRODUCTION

This chapter of the report was prepared to assess the potential significant effects of the proposed development on air quality associated with the proposed Flemington Lane South LRD, Balbriggan, Co. Dublin.

7.2 EXPERTISE & QUALIFICATIONS

This chapter was completed by Ciara O'Connor. Ciara is an Environmental Consultant in the Air Quality & Climate section of AWN Consulting, a Trinity Consultants Company. She holds a BSc in Environmental Science from University College Cork.

This chapter was reviewed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEEnvSc). She has over 9 years of experience in undertaking air quality and climate assessments.

7.3 PROPOSED DEVELOPMENT

The development will consist of the construction of 815 no. dwellings, provision of the C-Ring Road between Flemington Lane and the Clonard Road roundabout, open space, community floorspace in a 2-storey building, retail floorspace at ground floor of Block F, and 2 no. creches on an overall site area of 24.91 hectares comprising houses, apartments and later living dwellings. The development will also include Class 1 open space in the western portion of the development as well as a series of public open spaces throughout the site comprising, car parking, cycle parking and all ancillary site development, construction, and landscaping works.

7.3.1 ASPECTS RELEVANT TO THIS ASSESSMENT

During the construction phase construction dust emission have the potential to impact air quality. Dust emissions will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site. There is also the potential for engine emissions from site vehicles and machinery to impact air quality. Construction phase impacts will be short-term in duration.

Engine emissions from vehicles accessing the site have the potential to impact air quality during the operational phase of the development through the release of NO₂, PM₁₀ and PM_{2.5}. Operational phase impacts will be long-term in duration.

7.4 STUDY METHODOLOGY

7.4.1 RELEVANT LEGISLATION & GUIDANCE

The principal guidance and best practice documents used to inform the assessment of potential impacts on Air Quality is summarised below.

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);

- Advice Note on Preparing Environmental Impact Statements – Draft (EPA, 2015);
- Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management (IAQM), 2024);
- A Guide to The Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- TII Guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022) and TII Road Emissions Model (REM) online calculator tool (TII, 2025);

7.4.2 CRITERIA FOR RATING OF IMPACTS

7.4.2.1 Ambient Air Quality Standards

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in Directive (EU) 2024/2881 *of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe (recast)*. This directive supersedes EU Directive 2008/50/EC *of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe* (CAFE Directive). Directive (EU) 2024/2881 sets out air quality standards for pollutants to be reached by 2026 and by 2030 which are more closely aligned with the World Health Organisation (WHO) air quality guidelines.

The ambient air quality limit values for pollutants are set out in Annex I of Directive (EU) 2024/2881. Table 1 of Annex I in Directive (EU) 2024/2881 sets out the updated air quality limit values for pollutants to be achieved by 1 January 2030, which are more closely aligned with the WHO air quality guidelines. Table 2 of Annex I in Directive (EU) 2024/2881 sets out the limit values for air pollutants which are to be achieved by 11 December 2026 and are also applicable up to 2030. The limit values in Table 2 of Annex I are the same as the limits set under Directive 2008/50/EC and the Air Quality Standards Regulations 2022.

The Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022) (the Air Quality Standards Regulations 2022) further transposed the CAFE Directive and revoked the Air Quality Standards Regulations 2011, as amended. With the adoption of Directive (EU) 2024/2881, Ireland must transpose this directive into national law, i.e. update the Air Quality Standards Regulations, before December 2026. In relation to the proposed development, the applicable limit values are for nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). Table 7.1 outlines the limit values pre-2030 and post-2030 for the specified pollutants.

Table 7.1: Ambient Air Quality Limit Values

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	Limit Value (to be attained by 2026 and applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO ₂)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m ³	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m ³
	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m ³
	Annual limit for protection of human health	40 µg/m ³	Annual limit for protection of human health	20 µg/m ³
Particulate Matter (as PM ₁₀)	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m ³	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m ³
	Annual limit for protection of human health	40 µg/m ³	Annual limit for protection of human health	20 µg/m ³
Particulate Matter (as PM _{2.5})	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m ³
	Annual limit for protection of human health	25 µg/m ³	Annual limit for protection of human health	10 µg/m ³

7.4.2.2 WHO Air Quality Guidelines and Cleaner Air Strategy

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (shown in Table 7.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final PM_{2.5} target of 5 µg/m³. The strategy also acknowledges that “meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both PM_{2.5} and NO₂”.

Annex II of Directive (EU) 2024/2881 gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that “Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II.”

These assessment thresholds relate to monitoring of ambient air quality by Member States, where “exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years.”

Table 7.2: WHO Air Quality Guidelines

Table 1.2: WHO Air Quality Guidelines					
Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO ₂	WHO Air Quality Guidelines	24-hour limit for protection of human health	-	-	25 µg/m ³
		Annual limit for protection of human health	20 µg/m ³	-	10 µg/m ³
PM (as PM ₁₀)		24-hour limit for protection of human health	75 µg/m ³	50 µg/m ³	45 µg/m ³
		Annual limit for protection of human health	30 µg/m ³	20 µg/m ³	15 µg/m ³
PM (as PM _{2.5})		24-hour limit for protection of human health	37.5 µg/m ³	25 µg/m ³	15 µg/m ³
		Annual limit for protection of human health	15 µg/m ³	10 µg/m ³	5 µg/m ³

The applicable air quality limit values for the purposes of this assessment are those set out in Table 7.1. The pre-2030 limit values in Table 2 of Annex I of Directive (EU) 2024/2881 are applicable for the construction phase and Opening Year 2027 for the proposed development. The limit values stipulated in Table 1 of Annex I of Directive (EU) 2024/2881 are applicable for the Design Year 2042 for the proposed development.

7.4.2.3 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust, which are less than 10 microns, and the EU ambient air quality standards outlined in [Table 7.1](#), have set ambient air quality limit values for PM₁₀ and PM_{2.5}.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland.

However, guidelines for dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m²/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled 'Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m²/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the proposed development.

7.4.2.4 Air Quality Significance Criteria

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do-Nothing scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) and reproduced in Table 7.3 below. These criteria have been adopted for the proposed development to predict the impact of NO₂, PM₁₀ and PM_{2.5} emissions as a result of the proposed development.

Table 7.3: Air Quality and Traffic Significance Criteria

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Standard Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: TII (2022a) *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106*

As per Table 7.3 a neutral effect is one where a change in concentration at a receptor is:

- 5% or less where the Opening Year, without the proposed development, annual mean concentration is 75% or less of the standard; or
- 1% or less where the Opening Year, without the proposed development, annual mean concentration is 94% or less of the standard.

Where an effect does not meet the criteria for neutral, as described above, the effect can either be positive or negative. The TII guidance (TII, 2022) states that “*the evaluation of significance of effects for the operational phase should be undertaken for the Opening Year only as the Design Year is likely to show lower total pollutant concentrations and changes in concentration*” (TII, 2022).

Non-significant effects (i.e. of local importance only) are ‘neutral’ or ‘slight’ changes in concentrations while significant effects can be changes in pollutant concentrations that are either ‘moderate’ or ‘substantial’. However, the TII guidance (TII, 2022) states that these must be considered in the context of the project and ‘moderate’ or ‘substantial’ increases are not necessarily always significant effects.

The impact descriptors in Table 7.3 are used to describe the impact at each modelled receptor location, and the significance of the impacts is then determined, aligning with the terminology in the EPA guidelines (EPA, 2022). Whilst it may be determined that there are ‘slight’, ‘moderate’ or ‘substantial’ impacts at one or more receptors, an overall judgement should be made of whether the proposed development is ‘significant’ or ‘not significant’ in terms of air quality. Factors to consider when determining the overall significance of a proposed development are provided in Table 4.10 of the TII guidance (TII, 2022).

7.4.3 SITE SURVEYS/INVESTIGATIONS

No on-site surveys were required for the air quality assessment. The baseline air quality environment was established using available long-term EPA monitoring data for representative locations (see Section 7.5.2).

7.4.4 CONSTRUCTION PHASE

7.4.4.1 Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024) outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a).

The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into large, medium or small scale depending on the nature of the activities involved. The criteria for determining the category for the works involved are outlined in **Table 7.4**, these are based on the IAQM guidance (IAQM, 2024). The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 7.4: IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	Medium	Large
Demolition		
• Total building volume <12,000 m³ • Construction material with low potential for dust release (e.g. metal cladding or timber) • Demolition activities <6 m above ground • Demolition during wetter months	• Total building volume 12,000 - 75,000 m³ • Potentially dusty construction material • Demolition activities 6 – 12 m above ground level	• Total building volume >75,000 m³ • Potentially dusty construction material (e.g. concrete) • On-site crushing and screening • Demolition activities >12 m above ground level
Earthworks		
• Total site area <18,000 m² • Soil type with large grain size (e.g. sand) • <5 heavy earth moving vehicles active at any one time • Formation of bunds <3 m in height • Earthworks during wetter months	• Total site area 18,000 m² - 110,000 m² • Moderately dusty soil type (e.g. silt) • 5 – 10 heavy earth moving vehicles active at any one time • Formation of bunds 3 – 6 m in height	• Total site area >110,000 m² • Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) • >10 heavy earth moving vehicles active at any one time • Formation of bunds >6 m in height
Construction		

Dust Emission Magnitude		
Small	Medium	Large
- Total building volume <12,000 m³ - Construction material with low potential for dust release (e.g. metal cladding or timber)	- Total building volume 12,000 - 75,000 m³ - Potentially dusty construction material (e.g. concrete) - On-site concrete batching	- Total building volume >75,000 m³ - On-site concrete batching - Sandblasting
Trackout (Truck Movements)		
<20 HDV (>3.5 t) outward movements in any one day - Surface material with low potential for dust release - Unpaved road length <50 m	20 – 50 HDV (>3.5 t) outward movements in any one day - Moderately dusty surface material (e.g. high clay content) - Unpaved road length 50 – 100 m	>50 HDV (>3.5 t) outward movements in any one day - Potentially dusty surface material (e.g. high clay content) - Unpaved road length >100 m

The sensitivity of the area must then be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity. Table 7.5 outlines the criteria for determining the sensitivity of the area to dust soiling, dust-related human health effects and dust-related ecological effects as per the IAQM guidance (IAQM, 2024).

Table 7.5: Criteria for Determining the Sensitivity of the Area

Sensitivity of the Area to Dust Soiling Effects on People and Property						
Receptor Sensitivity	Number of Receptors	Distance from Source (m)				
		<20	<50	<100	<250	
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	
Sensitivity of the Area to Human Health Impacts						
Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m ³	>100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	< 24 µg/m ³	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	< 24 µg/m ³	>1	Low	Low	Low	Low
Sensitivity of the Area to Ecological Impacts						

Receptor Sensitivity	Receptor Sensitivity Description	Distance from Source (m)	
		<20m	<50m
High	International or national designation, with particularly dust sensitive species present. Examples include Special Area of Conservation (SAC) or Special Protection Area (SPA).	High	Medium
Medium	National designation where the features may be affected by dust deposition. Examples include Site of Special Scientific Interest (SSSI).	Medium	Low
Low	Local designation where the features may be affected by dust deposition. Examples include local wildlife sites or county wildlife sites.	Low	Low

Once the dust emission magnitude and sensitivity of the area have been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling, human health and ecological effects. The level of risk associated with each activity is determined using the criteria in Table 7.6.

Table 7.6: IAQM Criteria to Determine Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

7.4.4.2 Construction Phase Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022), states that road links meeting one or more of the following criteria can be defined as being ‘affected’ by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

Traffic Insights have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 11 Material Assets (Transportation) of this EIAR. As per Chapter 11, it has been determined by Traffic Insights that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT, or that the development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality with respect with human or ecological receptors.

7.4.5 OPERATIONAL PHASE

7.4.5.1 Operational Phase Traffic Assessment

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 7.4.4.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. Transport Insights has prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 11 Material Assets (Transportation). The proposed development will result in a greater than 1000 AADT increase on a number of road links in the vicinity of the proposed development site. As a result, an assessment of traffic related emissions was conducted. Additionally, traffic associated with other cumulative developments in the vicinity of the proposed development was included in the figures supplied to ensure a full cumulative assessment was conducted. See Traffic and Transport Assessment and Chapter 11 Material Assets (Transportation) for further details.

The impact of traffic emissions on air quality is assessed for both human and ecological receptors within 200 m of impacted roads as per the TII PE-ENV-01106 guidance (TII, 2022). The following sections describe the methodology for each assessment.

The impact to air quality as a result of changes in traffic is assessed at sensitive human receptors in the vicinity of affected roads. These are discussed in further detail within Section 0 and shown graphically in Figure 7.3.

The TII guidance (2022) states that modelling should be conducted for NO₂, PM₁₀ and PM_{2.5} for the Base, Opening and Design Years for both the Do Nothing, i.e. assuming the proposed development is not in place, and Do Something (with the proposed development in place) scenarios. Modelling of operational NO₂, PM₁₀ and PM_{2.5} concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2025).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), heavy duty vehicles (HDV) AADT (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background

concentrations. The Default fleet mix option was selected along with the Intermediate Case fleet data for cars, ICE Sales Ban for LGVs and EU target projections for HGVs, as per TII Guidance (TII 2022, TII 2025). The Intermediate Case assumes a linear interpolation between the Business-as-Usual case – where current trends in vehicle ownership continue and the Climate Action Plan (CAP) case – where adoption of low emission light duty vehicles occurs. The ICE Sales Ban 2035 option for LGVs presents a sales ban on new combustion engine vehicles to be implemented by 2035. The EU Targets projections for HGVs represents interim targets for emissions from sales of new HGVs. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM₁₀ emissions associated with brake and tyre wear (TII 2025).

Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

The TII guidance (2022) also states that impacts to sensitive ecology due to traffic emissions should be considered. Consideration should be given to designated sites within 2km of the proposed development. However, a detailed assessment is only required at a local level, where there is a designated site within 200m of impacted road links. The TII guidance (TII, 2022) notes that only sites that are sensitive to nitrogen and acid deposition need to be included in the assessment. It is not necessary to include sites, for example that have been designated as a geological feature or water course. There are no designated ecological sites within 200m of the site or impacted road links and therefore no assessment was required as there is no potential for significant impacts to the designated sites due to changes in air quality.

7.4.5.2 Traffic Data used in Modelling Assessment

Traffic flow information is detailed in Table 7.7 as obtained from Traffic Insights for the purposes of this assessment. Data for the Do Nothing and Do Something scenarios for the Opening Year 2027 and Design Year 2042 were provided. The traffic data included traffic associated with the development site and other cumulative sites as relevant (see Chapter 11 Material Assets (Transportation) for further details).

The modelling assessment has been undertaken for road links that were within 200 m of receptors. Background concentrations have been included as per Section 7.5.2 of this chapter based on available EPA background monitoring data (EPA, 2025).

Table 7.7: Traffic Data used in Operational Phase Air Quality Assessment

Road Name	Speed (kph)	Base Year LDV AADT (HDV AADT)	Opening Year		Design Year	
			Do Nothing LDV AADT (HDV AADT)	Do Something LDV AADT (HDV AADT)	Do Nothing LDV AADT (HDV AADT)	Do Something LDV AADT (HDV AADT)
Link 1 R122(NNE)	60	12768 (293)	13231 (312)	10915 (74)	14998 (406)	17191 (447)
Link 2 R122 (SSW)	60	14791 (455)	15329 (484)	4565 (76)	17375 (630)	22936 (757)
Link 3 R122(NNE)	60	11436 (99)	11851 (106)	8776 (172)	13433 (138)	12372 (97)
Link 4 L1130	60	3131 (121)	3245 (129)	9402 (199)	3678 (168)	0 (0)
Link 5 Boulevard Rd	50	2130 (71)	2207 (76)	4237 (132)	2502 (98)	4860 (98)
Link 6 R122(NE)	50	6148 (162)	6371 (172)	12698 (478)	7222 (224)	9626 (224)

Road Name	Speed (kph)	Base Year LDV AADT (HDV AADT)	Opening Year		Design Year	
			Do Nothing LDV AADT (HDV AADT)	Do Something LDV AADT (HDV AADT)	Do Nothing LDV AADT (HDV AADT)	Do Something LDV AADT (HDV AADT)
Link 7 R122 (W)	60	7363 (187)	7630 (199)	3344 (0)	8649 (259)	10420 (259)
Link 8 Hamlet Lane	60	2761 (124)	2861 (132)	2991 (0)	3243 (171)	4619 (171)
Link 9 R122 (W)	60	10852 (449)	11246 (478)	0 (0)	12747 (622)	14199 (622)
Link 10 Site Access (N)	50	0 (0)	0 (0)	0 (0)	0 (0)	3344 (0)
Link 11 Site Access (W)	50	0 (0)	0 (0)	14998 (406)	0 (0)	2991 (0)

7.5 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

7.5.1 METEOROLOGICAL DATA

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM₁₀, 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} - PM₁₀) will actually increase at higher wind speeds. Thus, measured levels of PM₁₀ will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport meteorological station, which is located approximately 19 km south of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 7.1). For data collated during five representative years (2020 – 2024), the predominant wind direction is westerly to south-westerly; the mean wind speed over the long term 30-year averaging period 1991 - 2020 is 5.3 m/s (Met Éireann, 2025).

Figure 7.1: Wind Roses for Dublin Airport Meteorological Station

7.5.2 BASELINE AIR QUALITY

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is 'Air Quality in Ireland 2024' (EPA, 2025). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022), as amended, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2025). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone C (EPA, 2025). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.). Representative EPA monitoring stations have been used to determine an estimate of the background air quality in the region of the proposed development.

7.5.2.1 NO₂

Long-term NO₂ monitoring was carried out at three representative Zone C locations for the period 2020 - 2024, Dundalk Co. Louth; Seville Lodge, Co. Kilkenny; and Portlaoise Co. Laois (EPA, 2025). Annual mean concentrations of NO₂ range from 4 – 11 µg/m³ over the 2020 – 2024 period (Table 7.8). Long term average concentrations are significantly below the annual average limit of 40 µg/m³. The overall 5-year average NO₂ concentration for the representative Zone C sites is 8 µg/m³. Based on this information, a conservative estimate of the current background NO₂ concentration in the region of the proposed development is 8 µg/m³.

Table 7.8: Trends in Zone C Air Quality – Nitrogen Dioxide (NO₂)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Dundalk, Co. Louth	Annual Mean NO ₂ (µg/m ³)	10	11	10	9	10
	1-hr Mean NO ₂ values >200 µg/m ³	1	0	1	1	0
Seville Lodge, Co. Kilkenny	Annual Mean NO ₂ (µg/m ³)	4	4	5	4	5
	1-hr Mean NO ₂ values >200 µg/m ³	0	0	0	0	0
Portlaoise, Co. Laois	Annual Mean NO ₂ (µg/m ³)	8	8	9	8	8
	1-hr Mean NO ₂ values >200 µg/m ³	0	0	0	0	0

7.5.2.2 PM₁₀

Continuous PM₁₀ monitoring was carried out at the representative Zone C locations of Athlone Co. Westmeath; Carlow Town Co. Carlow; Dundalk Co. Louth; Seville Lodge Co. Kilkenny; Portlaoise Co. Laois; and Tralee, Co. Kerry. Over the 2020 – 2024 period annual mean PM₁₀ concentrations range from 10 – 18 µg/m³ (Table 7.9). Hence, long term concentrations are significantly below the annual limit value of 40 µg/m³. In addition, there were at most 14 exceedances (in Tralee) of the 24-hour limit value of 50 µg/m³ in 2022, albeit 35 exceedances are permitted per year (EPA, 2024). The overall 5-year average PM₁₀ concentration at the representative Zone C sites is 13 µg/m³. Based on the EPA data, an estimate of the current background PM₁₀ concentration in the region of the development is 13 µg/m³.

Table 7.9: Trends in Zone C Air Quality – PM₁₀

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Athlone Co. Westmeath	Annual Mean PM ₁₀ (µg/m ³)	16	12	12	12	12
	24-hr Mean > 50 µg/m ³ (days)	3	2	3	-	3
Carlow Town Co. Carlow	Annual Mean PM ₁₀ (µg/m ³)	11	10	11	10	11
	24-hr Mean > 50 µg/m ³ (days)	1	0	0	-	0
Dundalk Co. Louth	Annual Mean PM ₁₀ (µg/m ³)	13	12	12	13	12
	24-hr Mean > 50 µg/m ³ (days)	2	0	2	-	0
Seville Lodge, Co. Kilkenny	Annual Mean PM ₁₀ (µg/m ³)	18	17	18	14	12
	24-hr Mean > 50 µg/m ³ (days)	1	2	2	-	0
Portlaoise, Co. Laois	Annual Mean PM ₁₀ (µg/m ³)	12	11	12	11	12
	24-hr Mean > 50 µg/m ³ (days)	0	1	0	-	2
Tralee, Co. Kerry	Annual Mean PM ₁₀ (µg/m ³)	16	17	18	15	15
	24-hr Mean > 50 µg/m ³ (days)	7	11	14	-	5

7.5.2.3 PM_{2.5}

Monitoring for PM_{2.5} was undertaken at the representative Zone C suburban background locations of Athlone Co. Westmeath; Bray Co. Wicklow; Carlow Town Co. Carlow; Portlaoise, Co. Laois and Tralee, Co. Kerry over the 2020 – 2024 period (

Table 7.10). Average concentrations ranged from 5-13 µg/m³ (EPA, 2024). The overall 5-year average PM_{2.5} concentration at the representative Zone C sites is 8 µg/m³. Based on the EPA data, an existing PM_{2.5} concentration in the region of the proposed development is 8 µg/m³.

Table 7.10: Trends in Zone C Air Quality – PM_{2.5}

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Athlone Co. Westmeath	Annual Mean PM _{2.5} (µg/m ³)	12	9	9	8	9
Bray Co. Wicklow	Annual Mean PM _{2.5} (µg/m ³)	5	6	6	6	6
Carlow Town Co. Carlow	Annual Mean PM _{2.5} (µg/m ³)	7	7	7	6	7
Portlaoise, Co. Laois	Annual Mean PM _{2.5} (µg/m ³)	8	8	8	7	8
Tralee, Co. Kerry	Annual Mean PM _{2.5} (µg/m ³)	12	13	13	10	11

7.5.2.4 Summary

Based on the above information the air quality in suburban Zone C locations, such as the Balbriggan area is generally good, with concentrations of the key pollutants generally below the relevant limit values set out in Table 2 of Annex I of Directive (EU) 2024/2881. The current pollutant concentrations at most of the monitoring sites are also in compliance with the 2030 limit values set out in Table 1 of Annex I in Directive (EU) 2024/2881 and the clean air strategy. The EPA have indicated that road transport emissions are contributing to increased levels of NO₂ with the potential for breaches in the annual NO₂ limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM₁₀ and PM_{2.5}). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2025).

7.5.3 SENSITIVITY OF THE RECEIVING ENVIRONMENT

7.5.3.1 Construction Phase

The impact to air quality due from construction phase activities is assessed at sensitive receptors within 250 m of the development boundary. In terms of receptor sensitivity to dust soiling, there are a number of highly sensitive residential properties within 250 m of the proposed development boundary (Figure 7.2). There are >100 high sensitivity residential receptors within 20m of the site boundary, there are a further >100 high sensitivity receptors within 250m of the site boundary.

Figure 7.2 shows the sensitive receptors in the construction dust study area within 250 m of the site.

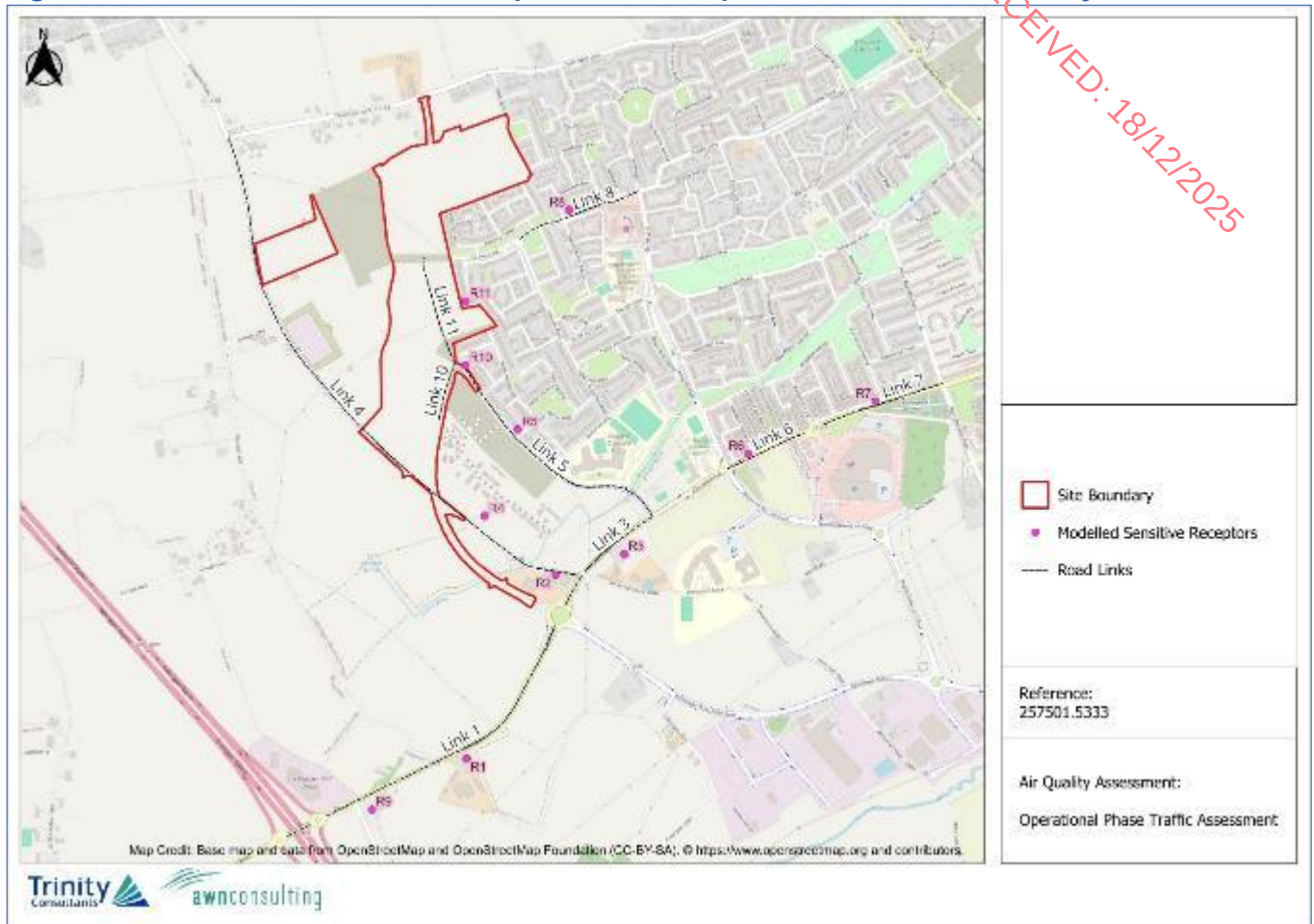
Figure 7.2: Construction Dust Sensitive Receptors within 250m of Site



7.5.3.2 Operational Phase

The impact to air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (2022) states that a proportionate number of representative receptors, which are located in areas which will experience the highest concentrations or greatest improvements because of the proposed development, are to be included in the modelling. The TII criteria state that receptors within 200 m of impacted road links should be assessed; roads which are greater than 200 m from receptors will not impact pollutant concentrations at that receptor (TII, 2022). The TII guidance (2022) defines sensitive receptor locations for the purposes of modelling annual mean pollutant concentrations as: residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e. locations where members of the public are likely to be regularly present for 24 hours. A total of 11 no. high sensitivity residential receptors (R1-R11) were included in the modelling assessment (see Figure 7.3).

Figure 7.3: Location of Sensitive Receptors used in Operational Phase Air Quality Assessment



7.6 DO NOTHING SCENARIO

In the Do-Nothing scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

The Do-Nothing scenario associated with the operational phase of the development is assessed within Section 7.7.2 and it was found to be **direct, long-term, negative** and **slight**, which is overall **not significant**.

7.7 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

7.7.1 CONSTRUCTION PHASE

7.7.1.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2024). The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (Section 7.5.1). A review of historical 30-year average data for Dublin Airport indicates that on average 200 days per year have rainfall over 0.2 mm (Met Éireann, 2025). Therefore, it can be determined that over 54% of the time dust generation will be negligible due to natural meteorological conditions.

To determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the sensitivity of the area (Section 7.5.3). The major dust generating activities are divided into four types within the IAQM (IAQM, 2024) guidance to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of heavy vehicles).

7.7.1.2 Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either small, medium or large depending on the scale of the works involved. The magnitude of each activity (Table 7.11) has been determined below for the proposed development using the criteria in Table 7.4.

Table 7.11: Potential Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	Small	Less than 12,000m ³ of buildings to be demolished
Earthworks	Large	Total site area is greater than 110,000 m ²
Construction	Large	Greater than 75,000m ³ of building to be constructed
Trackout	Medium	Between 20 and 50 outward vehicle movements per day from construction site activities

7.7.1.3 Determining the Sensitivity of the Area

In terms of receptor sensitivity to dust soiling, there are a number of highly sensitive residential properties within 100 m of the proposed development boundary. There are >100 high sensitivity residential properties within 20m of the site boundary, and there are a further >100 within 50m of the site boundary. Based on these receptor numbers and using the IAQM criteria in Table 7.5, the sensitivity of the area to dust soiling impacts from the proposed development is high.

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the

current annual mean PM₁₀ concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM₁₀ concentration in the vicinity of the proposed development is 13 µg/m³. There are >100 high sensitivity receptors within 20 m of the proposed development boundary. Based on the IAQM criteria outlined in Table 7.5 the worst-case sensitivity of the area to dust-related human health effects is medium.

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50 m from the site, and 50 m from site access roads, up to 250 m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present. There are no sensitive ecological receptors that meet these criteria within the study area and there is no potential for impacts to sensitive ecology from construction dust emissions and no further assessment is required.

7.7.1.4 Determining the Risk of Dust Impacts

As detailed in Table 7.6, The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. Table 7-12 below provides a summary of the risk of dust impacts for the proposed development.

There is at most a high risk of dust soiling impacts and a medium risk of dust-related human health impacts associated with the proposed works. Without mitigation in place, construction dust will have a **direct, negative, short-term** and **slight** impact on air quality, which potentially significant. As a result, best practice dust mitigation measures associated with high-risk works will be implemented to ensure there are no significant impacts at nearby sensitive receptors (see Section 7.5.3).

Table 7.12: Risk of Dust Impacts used to Define Site-Specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	High Risk	High Risk	Low Risk
Human Health	Low Risk	Medium Risk	Medium Risk	Medium Risk

7.7.1.5 Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality with respect to human health in the short-term over the construction phase, particularly, due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed, and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section 7.4.4.2.

Therefore, it can be determined that the construction stage traffic will have an **imperceptible, neutral, short-term** impact on air quality, and the effect will be **not significant**.

7.7.2 OPERATIONAL PHASE

7.7.2.1 Operational Phase Traffic Assessment

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated due to the development. The traffic data has included specific cumulative developments within the area to provide for a worst-case assessment and to assess potential cumulative impacts (see Chapter 15 Material Assets (Transportation), prepared by Traffic Insights, for further details).

The traffic data includes the Do Nothing (DN) scenario and Do Something (DS) scenario. The impact of NO₂, PM₁₀ and PM_{2.5} emissions for the Opening and Design Years was predicted at the nearest sensitive receptors to the impacted road links. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

Traffic related air emissions have the potential to impact air quality which can affect human health. The following details the results of the air dispersion modelling assessment of traffic emissions to determine the impact to human health. The predicted pollutant concentrations have been compared against the ambient air quality limit values set out in [Table 7.1](#). The limit values set out in Table 2 of Annex I in Directive (EU) 2008/50/EC are applicable to the Opening Year 2027 and limit values set out in Table 1 of Annex I in Directive (EU) 2024/2881 are applicable to the Design Year 2042 as the assessment year is post-2030.

NO₂

The results of the NO₂ modelling are shown in Table 7.13. In the Opening Year 2027, predicted annual mean NO₂ concentrations at the modelled receptors are in compliance with the annual mean limit value of 40 µg/m³, reaching at most 23% of the limit. In addition, the TII guidance (2022) states that the hourly limit value for NO₂ of 200 µg/m³ is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m³. As predicted NO₂ concentrations are significantly below 60 µg/m³, it can be concluded that the short-term NO₂ limit value will be complied with at all receptor locations. An increase in NO₂ concentrations is predicted at the worst-case receptor assessed in the Opening Year when compared with the Do-Nothing scenario. Concentrations are predicted to increase by 0.32 µg/m³ at receptor R6. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 0.80% at receptor R6. However, concentrations are predicted to decrease as well, by at most 0.23 µg/m³ (-0.58% of air quality limit value) at receptor R3, indicating air quality improvement at receptors R3 and R4. The other receptors in the area will experience similar or lesser impacts and all increases at other modelled receptors are considered 'neutral' as per the TII criteria in Table 7.3.

In the Design Year 2042, predicted annual mean NO₂ concentrations are in compliance of the limit value of 20 µg/m³ at all modelled receptors, reaching at most 41% of the limit. The proposed development will result in a 'neutral' increase in NO₂ concentrations according to the TII significance criteria in Table 7.3, with concentrations increasing by 0.03 µg/m³ at receptor R6 as a result of the proposed development, which is an increase of 0.15% when compared with the applicable annual mean limit value for NO₂. However, concentrations are predicted to decrease as well, by at most 0.02 µg/m³ (-0.10% of air quality limit value) at receptor R4, indicating air quality improvement at receptor R4. Therefore, the impact of the proposed development on NO₂ concentrations is 'neutral'.

Table 7.13: Predicted Annual Mean NO₂ Concentrations (µg/m³)

Impact Opening Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	9.2	23%	9.4	23%	0.15	0.37%	Neutral
R2	8.6	21%	8.7	22%	0.07	0.18%	Neutral
R3	8.8	22%	8.7	22%	-0.06	-0.15%	Neutral
R4	8.2	21%	8.0	20%	-0.23	-0.58%	Neutral
R5	8.3	21%	8.5	21%	0.26	0.65%	Neutral
R6	8.9	22%	9.2	23%	0.32	0.80%	Neutral
R7	8.9	22%	9.1	23%	0.19	0.47%	Neutral
R8	8.4	21%	8.5	21%	0.16	0.40%	Neutral
R9	8.0	20%	8.1	20%	0.01	0.03%	Neutral
R10	8.0	20%	8.3	21%	0.26	0.65%	Neutral
R11	8.0	20%	8.1	20%	0.07	0.18%	Neutral
Impact Design Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	8.1	41%	8.1	41%	0.01	0.05%	Neutral
R2	8.1	40%	8.1	40%	0.00	0.00%	Neutral
R3	8.1	40%	8.1	40%	0.00	0.00%	Neutral
R4	8.0	40%	8.0	40%	-0.02	-0.10%	Neutral
R5	8.0	40%	8.0	40%	0.01	0.05%	Neutral
R6	8.1	40%	8.1	41%	0.03	0.15%	Neutral
R7	8.1	40%	8.1	40%	0.02	0.10%	Neutral
R8	8.0	40%	8.0	40%	0.01	0.05%	Neutral
R9	8.0	40%	8.0	40%	0.00	0.00%	Neutral
R10	8.0	40%	8.0	40%	0.02	0.10%	Neutral
R11	8.0	40%	8.0	40%	0.00	0.00%	Neutral

PM₁₀

The results of the PM₁₀ modelling can be seen in Table 7.14 for the Opening Year 2027 and Design Year 2042.

In the Opening Year 2027, annual mean PM₁₀ concentrations at the modelled receptors are in compliance with the annual mean limit value of 40 µg/m³ reaching at most 37% of the limit. In the Design Year 2042 annual mean PM₁₀ concentrations are also in compliance with the annual mean limit value of 20 µg/m³ reaching at most 75% of the limit. In addition, the proposed development will not result in any days of exceedance of the daily PM₁₀ limit value ([Table 7.1](#)) in both the opening and design years.

The changes in PM₁₀ concentrations as a result of the proposed development can be assessed relative to the DN levels. In the Opening Year 2027 annual PM₁₀ concentrations will increase by at most 0.49 µg/m³ at receptor R6, this is a 1.23% increase when compared with the annual mean limit value of 40 µg/m³. However, concentrations are predicted to decrease as well, by at most 0.35 µg/m³ (-0.87% of air quality limit value) at receptor R4, indicating air quality improvement at receptors R3 and R4. The other receptors in the area will experience similar or lesser impacts and all increases at other modelled receptors are considered 'neutral' as per the TII criteria in Table 7.3.

In the Design Year 2042 the proposed development will result in a maximum increase of 0.43 µg/m³ at receptor R6, which is a 2.15% increase when compared with the annual mean limit of 20 µg/m³. However, concentrations are predicted to decrease as well, by at most 0.37 µg/m³ (-1.85% of air quality limit value) at receptor R4, indicating air quality improvement at receptors R3 and R4. The changes in concentrations in the Design Year are considered 'neutral' based on the TII criteria in Table 7.3.

Table 7.14: Predicted Annual Mean PM10 Concentrations (µg/m³)

Impact Opening Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	14.8	37%	15.0	37%	0.22	0.55%	Neutral
R2	13.9	35%	14.0	35%	0.10	0.25%	Neutral
R3	14.1	35%	14.0	35%	-0.10	-0.25%	Neutral
R4	13.4	33%	13.0	33%	-0.35	-0.87%	Neutral
R5	13.4	34%	13.8	35%	0.40	1.00%	Neutral
R6	14.4	36%	14.9	37%	0.49	1.23%	Neutral
R7	14.3	36%	14.6	36%	0.28	0.70%	Neutral
R8	13.6	34%	13.8	34%	0.23	0.57%	Neutral
R9	13.1	33%	13.1	33%	0.00	0.00%	Neutral
R10	13.0	33%	13.4	33%	0.38	0.95%	Neutral
R11	13.0	33%	13.1	33%	0.10	0.25%	Neutral
Impact Design Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	14.8	74%	14.9	75%	0.09	0.45%	Neutral
R2	13.8	69%	13.9	70%	0.09	0.45%	Neutral
R3	14.2	71%	14.1	70%	-0.10	-0.50%	Neutral
R4	13.4	67%	13.0	65%	-0.37	-1.85%	Neutral
R5	13.4	67%	13.8	69%	0.36	1.80%	Neutral
R6	14.5	72%	14.9	74%	0.43	2.15%	Neutral
R7	14.4	72%	14.6	73%	0.25	1.25%	Neutral
R8	13.6	68%	13.8	69%	0.20	1.00%	Neutral

Impact Opening Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R9	13.1	65%	13.1	65%	0.01	0.05%	Neutral
R10	13.0	65%	13.3	67%	0.34	1.70%	Neutral
R11	13.0	65%	13.1	65%	0.09	0.45%	Neutral

PM_{2.5}

In relation to changes in PM_{2.5} concentrations as a result of the proposed development, the results of the assessment can be seen Table 7.15 for the modelled Opening Year 2027 and Design Year 2042.

In the Opening Year 2027, predicted annual mean concentrations of PM_{2.5} at the modelled receptors are in compliance with the annual mean limit value of 25 µg/m³ reaching at most 40% of the limit. There is predicted to be an increase in PM_{2.5} concentrations at the worst-case receptor assessed in the Opening Year when compared with the Do-Nothing scenario. Concentrations are predicted to increase by 0.26 µg/m³ at receptor R6. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 1.04% at receptor R1. This increase is considered 'neutral' as per the TII criteria in Table 7.3. However, concentrations are predicted to decrease as well, by at most 0.37 µg/m³ (-1.85% of air quality limit value) at receptor R4, indicating air quality improvement at receptors R3 and R4. The other receptors in the area will experience similar or lesser impacts and all increases at other modelled receptors are considered 'neutral' as per the TII criteria in Table 7.3.

In the Design Year 2042, predicted annual mean PM_{2.5} concentrations at the majority of the modelled receptors are not in compliance with the limit value of 10 µg/m³. However, concentrations at receptor R1 and R6 reach at most 100% of the annual mean limit value. The proposed development will result in 'slight beneficial' decreases to 'moderate adverse' increase in PM_{2.5} concentrations according to the TII significance criteria in Table 7.3, with concentrations increasing by 0.23 µg/m³ at receptor R6 as a result of the proposed development, which is an increase of 2.30% when compared with the annual mean limit value of 10 µg/m³ for PM_{2.5}. However, concentrations are predicted to decrease as well, by at most 0.20 µg/m³ (-2.0% of air quality limit value) at receptor R4, indicating air quality improvement at receptors R3 and R4.

Table 7.15 Predicted Annual Mean PM_{2.5} Concentrations (µg/m³)

Impact Opening Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	10.0	40%	10.1	40%	0.12	0.48%	Neutral
R2	9.5	38%	9.5	38%	0.05	0.20%	Neutral
R3	9.6	38%	9.6	38%	-0.05	-0.20%	Neutral
R4	9.2	37%	9.0	36%	-0.19	-0.76%	Neutral
R5	9.2	37%	9.4	38%	0.21	0.84%	Neutral
R6	9.7	39%	10.0	40%	0.26	1.04%	Neutral
R7	9.7	39%	9.9	39%	0.15	0.60%	Neutral
R8	9.3	37%	9.4	38%	0.13	0.52%	Neutral
R9	9.0	36%	9.0	36%	0.00	0.00%	Neutral

Impact Opening Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R10	9.0	36%	9.2	37%	0.20	0.80%	Neutral
R11	9.0	36%	9.1	36%	0.05	0.20%	Neutral
Impact Design Year							
Receptor	DN	% of AQLV	DS	% of AQLV	DS-DN	% Change of AQLV	Description
R1	10.0	100%	10.0	100%	0.05	0.50%	Neutral
R2	9.5	95%	9.5	95%	0.05	0.50%	Slight Adverse
R3	9.6	96%	9.6	96%	-0.05	-0.50%	Slight Beneficial
R4	9.2	92%	9.0	90%	-0.20	-2.00%	Slight Beneficial
R5	9.2	92%	9.4	94%	0.19	1.90%	Slight Adverse
R6	9.8	98%	10.0	100%	0.23	2.30%	Moderate Adverse
R7	9.7	97%	9.9	99%	0.13	1.30%	Slight Adverse
R8	9.3	93%	9.4	94%	0.12	1.20%	Neutral
R9	9.0	90%	9.0	90%	0.00	0.00%	Neutral
R10	9.0	90%	9.2	92%	0.18	1.80%	Slight Adverse
R11	9.0	90%	9.1	91%	0.05	0.50%	Neutral

7.7.2.2 Significance of Predicted Changes in NO₂, PM₁₀ and PM_{2.5} Concentrations

As outlined in 7.4.2.4, the TII guidance (2022) states that the significance of effects should be assessed based on the opening year only. Non-significant effects are 'neutral' or 'slight' changes in concentrations while significant effects can be changes in pollutant concentrations that are either 'moderate' or 'substantial'. However, the TII guidance (2022) states that these must be considered in the context of the project and 'moderate' or 'substantial' increases are not necessarily always significant effects.

In relation to NO₂, PM₁₀ and PM_{2.5} the predicted changes in concentrations are 'neutral' at the worst-case receptors assessed in the Opening Year. Therefore, according to the TII criteria as outlined in 7.4.2.4, the impact is not significant.

For the purposes of this assessment, it has been assumed that the current estimated background pollutant concentrations are applicable for both the opening and design years, with no decreases in future background concentrations allowed for. There will be some decreases in background concentrations in future years. However, at present there is no guidance-based methodology available for estimating future year background concentrations and therefore, as a conservative approach, the current estimated background concentrations have been applied to future years.

Due to the large uncertainty in future improvements in fleet composition and emissions, such as projected changes to vehicle registration and electric vehicle uptake, the future year emission rates utilised by the TII REM tool do not account for the full implementation of these measures. Predicted design year concentrations are therefore currently overly conservative as future emissions improvements are not fully taken into account, as well as no improvement in background concentrations being assumed.

As a result, the opening year predicted concentrations are the most appropriate for determining the significance of effects as per 7.4.2.4.

It can be concluded that the impact of traffic emissions on air quality and human health during the operational phase is **long-term, direct, localised, negative** and **not significant** in EIA terms.

The measures set out in the Clean Air Strategy for Ireland (Government of Ireland 2023) aim to work towards solutions to ensure that air pollution concentrations are reduced in order to comply with the future changes in limit values. Ireland will need to continue to implement and develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. The estimated background concentrations used in the assessment are the largest contribution to predicted pollutant concentrations, rather than pollutant contributions associated with the proposed development. Strategies to improve air quality at a national level in future years will contribute to reducing background concentrations and therefore it is envisioned that air quality will improve in the future.

7.8 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

7.8.1 CONSTRUCTION PHASE

The proposed development has been assessed as having a high risk of dust soiling impacts and a medium risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 7.7.1). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. Mitigation measures for high-risk sites as recommended by IAQM construction dust guidance are detailed in [Table 7.16](#).

Table 7.16: Site Specific Mitigation Measures

Mitigation Measure
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
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in the IAQM Guidance. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.
Site Management

Mitigation Measure
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Hold regular liaison meetings with other high risk construction sites within 500m 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.
Monitoring
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
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 active for an extensive period
Avoid site runoff of water or mud.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, 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 (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)

Mitigation Measure
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
Operations
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
Use enclosed chutes and conveyors and covered skips.
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management
Avoid bonfires and burning of waste materials.
Measures Specific to Demolition
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible to provide a screen against dust
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
Avoid explosive blasting, using appropriate manual or mechanical alternatives.
Bag and remove any biological debris or damp down such material before demolition.
Measures Specific to Earthworks
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable.
Only remove the cover in small areas during work and not all at once.
Measures Specific to Construction
Avoid scabbling (roughening of concrete surfaces) if possible.
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
Measures Specific to Trackout

Mitigation Measure
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
Record all inspections of haul routes and any subsequent action in a site log book.
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers 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 10m from receptors where possible.

7.8.2 OPERATIONAL PHASE

No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant.

7.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

7.9.1 CONSTRUCTION PHASE

In order to minimise dust emissions during construction, mitigation will be undertaken during construction activities, as set out in Section 7.8.1. Provided the dust minimisation measures are adhered to, the predicted residual air quality impacts during the construction phase are **short-term, direct, localised, negative** and **not significant**.

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values, which are based on the protection of human health (see [Table 7.1](#)). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is **short-term, direct, localised, negative** and **not significant**.

7.9.2 OPERATIONAL PHASE

No significant residual effects are predicted for the operational phase of the proposed development.

7.10 MONITORING

7.10.1 CONSTRUCTION PHASE

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m²/day during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

7.10.2 OPERATIONAL PHASE

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be imperceptible.

7.11 CUMULATIVE IMPACT ASSESSMENT

7.11.1.1 Construction Phase

Cumulative construction dust impacts may occur if large-scale developments within 500 m of the site are under construction simultaneously.

The National Planning Application Database (Department of Housing, Local Government, and Heritage, 2025) was reviewed for planned and permitted projects within the last ten years in the vicinity of the site was undertaken to identify developments within 500 m of the overall proposed development boundary with the potential for cumulative construction phase impacts. Regard was had to the projects below and as outlined in chapter 17 of the EIAR relating to cumulative development.

The following developments were identified of sufficient scale to potentially generative cumulative dust impacts with the proposed development.

Table 7.17: Summary of Committed Developments with Potential for Cumulative Construction Dust Effects

Planning Reference No.	Description
F23A/0634	Development at the existing waste recovery facility located at Stephenstown Business Park.
F22A/0480	Development will principally comprise the construction of a two-storey warehouse unit with ancillary office and staff facilities and associated development as well as a single storey garage.
F22A/0033	The development will consist of a distillery (total floor area of floor area 5659m ²) which includes provision of an ancillary visitor centre, storage shed along with associated external plant.

Planning Reference No.	Description
F23A/0075	Construction of 4no. two storey terraced 3-bedroom dwellings, rear garden areas, boundary walls, connections to existing services and all associated site development works at Bremore Pastures, Balbriggan, County Dublin.
LRD0048/S3E	197 no. dwellings, and ancillary infrastructure to facilitate Phase 4 lands at Ladywell in Balbriggan.
F22A/0670	Development will consist of 75 no. dwellings comprising 68 no. houses consisting of 22 no. 2 bedroom dwellings, 41 no. 3 bedroom dwellings, 2 no. 4 bedroom detached dwellings, & 3 no. 5 bedroom detached dwellings.
F22A/0526	Development will consist of 95 no. dwellings comprising 79 no. 2-storey houses consisting of 20 no 2 bedroom, 59 no. 3 bedroom dwellings all with associated private open space (in a mixture of semi-detached, terraced and detached units), 16 no. 1 bedroom Maisonettes, all with private open space; in 4 no. 2 storey building.
F21A/0055	The development will consist of 99 no. dwellings comprising 73 no. 2-storey houses consisting of 24 no. 2 bedroom dwellings, 44 no. 3 bedroom dwellings & 5 no. 4 bedroom dwellings, all with private open space; 16 no. duplex apartments and 8 no. 3 bedroom units in a 3 storey duplex building; 6 no. 1 bedroom 'triplex' apartments.
ABP 313210-22 SHD	Construction of 817 no. residential units (377 no. houses, 440 no. apartments), childcare facilities and associated site works, subject to 30 no. standard conditions.
F24A.1069E	Demolition of existing 2 no. storey building on site (c. 1,070 sqm), the construction of a 2 no. storey discount retail store with off-licence use (c. 2,448 sqm gross floor area) c. 1,356 sqm net retail floor area.
F19A/0131	Demolition of existing school and construction of new 3 storey Post Primary School & single storey Special Education Needs Unit.

The principal potential cumulative effect related to fugitive dust emissions. The dust mitigation measures outlined in Section 7.8.1 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. Similar dust mitigation measures are required for other permitted developments as per their respective impact assessments and planning conditions.

With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development is **short-term, direct, negative** and **not significant**.

7.11.1.2 Operational Phase

There is the potential for cumulative and also indirect impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic data provided for the Operational Phase air quality assessment included specific cumulative developments within the area (see Chapter 11 Material Assets (Transportation) for further details) as well as the Climate Chapter.

The cumulative operational phase impact is assessed within Section 7.7.2.1 and was found to have a neutral impact on air quality as per the TII significance criteria (**Table 7.3**). The cumulative Operational Phase impact is **long-term, localised, direct, negative** and **not significant**.

7.12 REINSTATEMENT

This is not relevant to air quality.

7.13 INTERACTIONS

7.13.1 AIR QUALITY AND POPULATION & HUMAN HEALTH

7.13.1.1 Construction Phase

An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the proposed development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is **direct, short-term, negative, localised** and **not significant** with respect to Population and Human Health during the construction phase.

7.13.1.2 Operational Phase

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the proposed development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Impacts will be **long-term, localised, direct, negative** and **not significant**.

7.13.2 AIR QUALITY AND CLIMATE

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

7.13.3 AIR QUALITY AND LAND & SOILS

7.13.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land & Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

7.13.3.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Land & Soils during the operational phase.

7.13.4 AIR QUALITY AND BIODIVERSITY

7.13.4.1 Construction Phase

Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. There are no designated ecological sites within 250 m of the proposed development site area. Significant dust impacts are not predicted beyond this distance. Dust mitigation measures will be implemented on site as set out in

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Section 7.8. With the implementation of these mitigation measures dust emissions will be minimised and impacts will be **direct, short-term, negative, localised** and **not significant** with respect to biodiversity.

7.13.4.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Biodiversity during the operational phase.

7.13.5 AIR QUALITY AND MATERIAL ASSETS – TRAFFIC & TRANSPORT

7.13.5.1 Construction Phase

Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are linked but there is no potential for significant impacts from traffic on air quality. The effects are considered to be **direct, short-term, neutral, localised** and **not significant** during the construction phase.

7.13.5.2 Operational Phase

The impact of the interactions between Traffic and Air Quality are considered to be **long-term, direct, negative** and **not significant** during the operational phase.

7.14 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no difficulties encountered when compiling this assessment.

7.15 REFERENCES

- Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2025) Air Quality in Ireland 2024 (& previous annual reports 2020-2023)
- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft
- Government of Ireland (2023) Clean Air Strategy for Ireland
- Institute of Air Quality Management (IAQM) (2020) A Guide to the Assessment of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)
- Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)
- Met Éireann (2025) Met Éireann website: <https://www.met.ie/>
- Transport Infrastructure Ireland (2022) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106
- Transport Infrastructure Ireland (2025) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107
- World Health Organisation (2021) Air Quality Guidelines (and previous Air Quality Guideline Reports 1999 & 2000 & 2006)

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8.0 CLIMATE

8.1 INTRODUCTION

This chapter assesses the likely climate impacts associated with the proposed Large Scale residential development located on lands at Flemington Lane South, Balbriggan, Co. Dublin. A full description of the development is available in Chapter 2.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies appropriate adaptation and mitigation measures to increase project resilience.

8.1.1 STATEMENT OF AUTHORITY

This chapter was prepared by Sarah Berry, a Principal Climate Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Physical Geography from the University of Leeds. She has 9 years' experience in the climate change and sustainability sectors, with expertise in greenhouse gas accounting and verification. She also has experience in greenhouse gas permitting. Her experience includes conducting strategic sector-specific GHG audits across a range of industries including data centres, industrial facilities, hospitals, manufacturing, power stations, wastewater treatment works and airports.

This chapter was prepared by Caolán Leneghan, Senior Climate Change Consultant at AWN Consulting. Caolán holds degrees in Geography and International Development (Maynooth University) and Disaster Risk Management & Climate Change Adaptation (Lund University, Sweden). With over five years' experience, he specialises in climate risk assessment, adaptation strategy, and advisory services across sectors including infrastructure (including residential), transport, energy, urban planning, and water. He has also supported international development and climate resilience advising The World Bank, MDBs and UK government on climate adaptation and delivering guidance for assessment.

This chapter was reviewed by Ciara Nolan. Ciara is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has over 9 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments including Woodbrook, Shankill (Planning Application Ref. ABP30584419), Ballygossan Park, Skerries (Planning Application Ref. LRD0010/S3), SHD Ratoath (Planning Application Ref. SH305196), SHD Rathmullen, Drogheda (Planning Application Ref. SH305552), commercial and industrial developments by Dublin Airport Authority, Abbvie, Mountpark, Pfizer, Takeda, as well as renewable energy developments such as Crockahenny Windfarm, Upperchurch Windfarm, Knocknamona Windfarm and Keerglen Windfarm. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Echelon DC, AWS, Takeda, MSD and Regeneron. She has undertaken air quality and climate impact assessments for transportation schemes, primarily regional and national road schemes, from constraints, through to route selection and EIAR stage.

8.1.2 ASPECTS RELEVANT TO THIS ASSESSMENT

Construction, operational and end of life greenhouse gas (GHG) emissions have been assessed with respect to this project. During the construction phase, embodied carbon associated with construction materials, transport of materials, clearance, demolition and excavation of existing land, construction waste and disposal routes will be calculated, as these activities have the potential to impact climate through the release of CO₂ and to a lesser extent, other greenhouse gases (GHGs). Impacts to climate are assessed against Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

During the operational phase, maintenance activities and vehicle use both contribute GHG emissions and will be calculated as part of this assessment. Energy use by occupants varies significantly, therefore, this element has not been quantified and sits outside the scope of this assessment. Measures to reduce operational phase energy usage have been reviewed as part of this assessment. Operational phase impacts will be long-term in duration.

In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational phase. The proposed development has been designed to minimise the impact on climate where possible in line with the most recent development guidelines (Part L of the Building Regulations 2022) and in reference to measures within the Climate Action Plan 2025 (Government of Ireland, 2025).

8.2 STUDY METHODOLOGY

8.2.1 RELEVANT GUIDANCE, LEGISLATION & POLICY

8.2.1.1 Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on climate are summarised below. In addition to specific climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

The assessment has referred to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Environmental Protection Agency (2024b) National Climate Change Risk Assessment (NCCRA)
- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (TII, 2022b);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2025);
- Institute of Sustainability and Environmental Professionals (ISEP) (formerly known as Institute of Environmental Management & Assessment (IEMA)) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the ISEP 2022 GHG Guidance) (ISEP, 2022);
- ISEP Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the ISEP 2020 EIA Guide) (ISEP, 2020a);

- ISEP GHG Management Hierarchy (hereafter referred to as the ISEP 2020 GHG Management Hierarchy) (ISEP, 2020b);
- ISEP Principles Series: Climate Change Mitigation & EIA (ISEP, 2010);
- Carbon Management in Infrastructure and Built Environment - PAS 2080 (BSI, 2023); and
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

8.2.1.2 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (as amended) (Government of Ireland, 2015) was enacted (the 2015 Act). The purpose of the 2015 Act was to enable Ireland *"to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050"* (3.(1) of No. 46 of 2015). This is referred to in the 2015 Act as the 'National Transition Objective'. The 2015 Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the 2015 Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The fifth and most recent climate action plan, CAP25, was published in April 2025 (Government of Ireland, 2025).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd of July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021) is to provide for the approval of plans *"for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050"*. The 2021 Climate Act also provides for *"carbon budgets and a decarbonisation target range for certain sectors of the economy"*. The 2021 Climate Act defines the carbon budget as *"the total amount of greenhouse gas emissions that are permitted during the budget period"*.

In relation to carbon budgets, the 2015 Act (as amended) states *"a carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'Budget Period')"*. The carbon budget is defined as the total amount of greenhouse gas emissions that are permitted during the budget period. The carbon budget is to be produced for 3 sequential budget periods (Table 8.1). The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period, and different ceilings may apply to different sectors. The sectoral emission ceilings for 2030 were published in the Climate Action Plan 2025 (CAP25) (Government of Ireland, 2025) (Table 8.2).

Table 8.1: 5-Year Carbon Budgets

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO ₂ e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO ₂ e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO ₂ e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 8.2: Sectoral Emission Ceilings 2030

Sector	Baseline (MtCO ₂ e)	Carbon Budgets (MtCO ₂ e)		2030 Emissions (MtCO ₂ e)	Indicative Emissions % Reduction in Final Year of 2025 – 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment – Residential	7	29	23	4	40
Built Environment – Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

8.2.1.3 Policy

Greenhouse Gas Assessment Policy

In 2024, the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (Government of Ireland, 2024e). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the CAP.

In December 2023, CAP24 was published, establishing key actions to deliver a 51% reduction in GHG emissions by 2030 (compared to 2018 levels) and achieve climate neutrality by 2050 (Government of Ireland, 2023a). The updated and current CAP25, published in April 2025, builds on the progress of the previous four iterations of the CAP, with CAP23 first publishing carbon budgets and sectoral emission ceilings, and reaffirms Ireland's climate ambition, with a focus on delivery, implementation and measurable outcomes, particularly ahead of the second carbon budget period (2026–2030). 2025 is the last year in the first 5-year carbon budget period. During the initial 5-year budget period the average annual reduction required was 4.8%, this increases to 8.3% in the second budget period (2026-2030). CAP25 retains the high-impact sectors where the biggest savings can be achieved, while emphasising public sector

leadership and green procurement. These sectors include renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and land-use change.

CAP25 also includes targeted actions to decarbonise industrial heat and support the transition to carbon-neutral manufacturing processes. Public sector leadership is strengthened through a new *Buying Greener: Green Public Procurement Strategy and Action Plan (2024–2027)*, the development of mandatory Climate Action Roadmaps, and enhanced emissions monitoring and reporting across government operations. To support innovation and ensure future economic resilience, IDA Ireland continues to attract and support businesses investing in climate technologies and low-carbon solutions.

CAP25 highlights a significant 17% reduction in electricity emissions in early 2024, with wind power supplying nearly 40% of Ireland's total electricity demand and over 100,000 rooftop microgenerators connected to the grid. Investments are ongoing in grid reinforcement, offshore wind development, and interconnectors with France and the UK to enhance renewable generation capacity. EirGrid, Enterprise Ireland and IDA Ireland have recently signed an MoU to collectively support offshore wind development in Ireland.

CAP25 also reinforces targets first outlined in CAP24 to reduce the embodied carbon of construction materials, with a 10% reduction by 2025 and 30% reduction by 2030 for materials produced and used in Ireland. Cement and high embodied carbon construction materials can be reduced through product substitution, reduced clinker content in cement and uptake of low-carbon construction methods, including those outlined in the Construction Industry Federation 2021 report *Modern Methods of Construction* (Construction Industry Federation, 2021). There also remains scope for the construction industry to use more timber in construction. In 2022, 24% of new construction in Ireland was built using timber frames to satisfy the demand for housing. Public bodies are now required under the Public Sector Mandate to use best practice project design to reduce embodied carbon; procure concretes with clinker replacements (lower carbon); and require that large construction projects produce a whole life cycle GHG emissions assessment.

Furthermore, CAP25 advances sector-specific measures in green procurement, electrification of transport and heat, and just transition (with the introduction of a Just Transition Commission) to support vulnerable communities. Transport emissions increased by 0.3%. Electric vehicles and the use of biofuels are stated as the best means of transport emission reductions in the medium term.

Local policy

The Fingal County Council (FCC) Climate Action Plan 2024-2029 (FCC and Codema, 2024) outlines FCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The FCC Climate Action Plan states that FCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. Similar to DECC, FCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

Climate Change Vulnerability Policy

The Second National Adaptation Framework (NAF) (Government of Ireland, 2024f), published in June 2024 under the Climate Action and Low Carbon Development Act 2015, outlines a comprehensive, whole-of-government and whole-of-society approach to climate adaptation. Its core objective is to enhance Ireland's resilience to a wide range of climate risks, including extreme weather events, flooding, drought, biodiversity loss, sea level rise, and rising temperatures.

Building on the principles of a "Just Transition", the NAF introduces the concept of "Just Resilience", envisioning a climate-resilient Ireland that ensures fairness, equity, and inclusivity in adaptation planning and implementation. It promotes reduced reliance on fossil fuels, the expansion of electrified and accessible public transport, and the integration of sustainability and climate resilience across all sectors.

These include energy, water, wastewater, agriculture, transport, health, built environment, and biodiversity, with a strong emphasis on mainstreaming adaptation practices into policy, planning, and operations.

With respect to the housing and infrastructure sectors, the second NAF highlights several potential climate impacts and risks and adaptation measures:

- **Increased frequency and intensity of rainfall** may damage homes and surrounding infrastructure, requiring integration of flood risk management into spatial planning, use of sustainable drainage systems, and elevation or relocation of housing in highly vulnerable areas.
- **Temperature increases** in homes call for passive cooling design, improved ventilation, and retrofitting measures to maintain thermal comfort and protect health during heatwaves.
- **Power outages during extreme weather events** can disrupt heating and cooling systems, highlighting the need for backup power solutions and emergency response protocols for residential areas.

The National Climate Change Risk Assessment Main Report (NCCRA) was published in June 2025 (EPA, 2025b). 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
- **Sensitivity** - refers to the degree to which a system or asset is affected by climate hazards. It reflects how vulnerable something is to changes such as temperature extremes, flooding, or drought, based on its physical, functional, or ecological characteristics.
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity
- **Risk** - the potential for adverse consequences for human or ecological systems.

When considering risk, the NCCRA assess 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 assess risks to Ireland and assumes global emission reduction targets are not met. This aligns with the principle of precaution as stated in the NAF (Government of Ireland, 2024f). In addition to the future climate scenarios, the NCCRA assesses the risk from the future climate during the following timeframes:

- Present (~2030).
- Medium term (2040-2070) (~ 2050).
- Long term (2070-2100) (~2100).

It is recommended that the Environmental Impact Assessment (EIA) for climate risk and vulnerability evaluates risks across the lifecycle of the proposed development—construction and operational phases. For this project, future climate risk has been assessed using the 2050s timeframe.

8.2.2 GREENHOUSE GAS ASSESSMENT

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 8.3.1).

8.2.2.1 Construction Phase

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period, i.e. the assumed building life expectancy, for the purposes of the assessment is 50 years. Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP goal of Net Carbon Zero by 2050.

A detailed lifecycle assessment (LCA) was undertaken by the project developer (Glenveagh Properties) on their most commonly used house types and apartments. The project developer uses consistent designs across their various developments. This level of repeatability allowed for a detailed LCA to be undertaken across the most commonly used typologies, the results of which have been used to generate a typical embodied carbon figure suitable for use across all Glenveagh units.

A specific kgCO₂e/m² figure has been calculated which can be factored based on the specific gross internal area (m²) of the unit to be assessed. Summing the embodied carbon for all of the units within the proposed development then provides an estimate of the embodied carbon associated with the specific project.

The lifecycle assessment followed the lifecycle stage terminology consistent with widely used industry standards (based on BS EN 15978:2011, BS EN 15804:2012):

- **Stage A1 – A3: Product Carbon** The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- **Stage A4 – A5: Construction Carbon** These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- **Stage B1 – B5: In Use Carbon** – use of the building (B1), maintenance (B2), repair (B3), replacement (B4) and refurbishment (B5).
- **Stage B6, B7, B8: In Use Phase** operational use energy (B6), water (B7) and user activities carbon (B8). *These categories have been excluded from the assessment due to the significant variability in user emissions.*
- **Stage C1 – C4: End of Life Carbon** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.

- **Biogenic Carbon:** Carbon sequestered during the growth cycle of a tree that is temporarily stored in the timber product until the end of its useful life. This element must be reported separately to the A – C carbon.

The house types assessed were of timber framed construction with a rendered blockwork façade and concrete tile roof and the apartments were pre-cast concrete. These typologies were considered 'typical' for Glenveagh projects. The LCA study examined the carbon across the lifecycle of the typical unit, and this information can then be used to mitigate impacts from Glenveagh projects and target key areas for improvement.

The LCA was assessed in line with EN15978 and European Level(s) methodologies. The assessment has also followed *RICS Whole Life Carbon Assessment for the Built Environment Guidance V1*, which is comparable with the European Level(s) methodology, but it has been adapted to accommodate a 50-year service life for the building to coordinate with European Level(s) methodologies.

OneClick LCA, in addition to Glenveagh specific calculations, was used to calculate embodied carbon emissions in line with detailed RICS guidance. The Inventory of Carbon and Energy (ICE) database as well as Environmental Product Declaration (EPDs) were used to find the relevant carbon factors for the specified materials.

The building element groups included in the embodied carbon assessment were substructure; frame; floors; external walls; internal walls and partitions; windows and doors; roofs; services; MEP (mechanical, electrical and plumbing); some permanent furnishings; and some external works.

An uncertainty factor was included in the LCA calculations. Due to the early design stage, precise material quantities and types are not yet known. To ensure emissions are not under-reported a conservative uncertainty factor of 22% was added to all the embodied carbon emissions based on the RICS V2 guidance, which is more conservative than the RICS V1 guidance.

The Glenveagh LCAs concluded that a figure of:

- 500 kgCO₂e/m² for total carbon (A – C stages, total lifecycle) can be used in EIAR assessments for typical house types.
- 1150 kgCO₂e/m² for total carbon (A – C stages, total lifecycle) can be used in EIAR assessments for typical apartment types.

The Glenveagh house types utilise a timber framed construction. Timber usage has a positive climate impact through carbon sequestration. Carbon sequestration is the process of capturing and storing atmospheric carbon. Trees and plants absorb CO₂ from the atmosphere during photosynthesis in exchange for oxygen that they give out in return.

Biogenic carbon is the term used for carbon absorbed, stored and emitted by organic matter like soil, trees, plants and grasses.

The LCA found that a reduction of 21% and 3% of total embodied carbon emissions (A – C stages) can be utilised for the biogenic carbon associated with the Glenveagh house types and apartments respectively. This will be a carbon saving or negative carbon figure, within the climate impact assessment.

This biogenic carbon must be reported separately to the embodied carbon results and is not included within the figures for the embodied carbon associated with the house and apartment units referenced above.

There are 2 no. creches proposed as part of the proposed development. The creches are not covered by Glenveagh's LCAs. To calculate the embodied carbon resulting from this part of the development, the OneClick LCA tool was utilised. OneClick 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. Data was obtained from the project design team in terms of estimated material types and quantities. Where an exact material type or quantity was not known, as it will not be chosen until detailed design, an estimate value or alternative material was used within the tool to complete the GHG assessment. The tool allows for optioneering and optimisation 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.

In addition to the embodied carbon associated with the buildings in the proposed development, other elements of the proposed development such as site activities, land clearance works, construction worker travel to site, etc. also result in a carbon impact. PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2025). It should be noted that some of the GHG emissions within the TII carbon tool results will have been accounted for within the building LCA therefore the results are conservative estimates and based on a worst- case scenario. A list of assumptions can be found in Table 8.14.

The TII Online Carbon Tool (TII, 2025) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2024) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESMM) Carbon and Price Book database (CESMM, 2013), which can be applied to a variety of developments, not just road or rail. The tool aligns with PAS 2080.

The results of the Glenveagh LCA and the TII Carbon Tool were summed to provide a total carbon impact for the proposed development.

8.2.2.2 Operational Phase

8.2.2.2.1 Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022b), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment, and also the climate assessment.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

There are a number of road links that will experience a change of over 1,000 in the AADT during the operational phase due to the proposed development. As a result, a detailed assessment of traffic related carbon dioxide (CO₂) emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be calculated using the TII Road Emissions Model (REM) online calculator tool (TII, 2024). The TII guidance (TII, 2022b) states that modelling should be conducted for the Base, Opening and Design Years for both the Do Nothing and Do Something scenarios. The output is provided in terms of CO₂e.

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection for cars, the *ICE Sales Ban 2035* fleet data base for LGVs and the *EU Target* for the HGV fleet data base, as per TII Guidance (TII, 2024; 2025). The Intermediate Case assumes a linear interpolation between the Business-as-Usual case – where current trends in vehicle ownership continue and the Climate Action Plan (CAP) case – where adoption of low emission light duty vehicles occurs. The ICE Sales Ban 2035 represents a sales ban on new combustion engine vehicles to be implemented by 2035, and the EU Target for HGV represents interim targets for emissions from sales of new HGVs.

Traffic flow information was obtained from Traffic Insights, the traffic engineers, for the purposes of this assessment. Data was provided for the Base Year 2025, Opening Year 2027 and Design Year 2042 (see Traffic and Transport Assessment for further details). Both the Do Nothing and Do Something scenarios are quantified to determine the degree of change in emissions due to the proposed development. A total of 2 no. scenarios were assessed, these include:

- The Do-Nothing scenario – this scenario assumes the proposed development is not in place in future years but includes traffic associated with cumulative developments in the wider area.
- The Proposed scenario – this is the “Do Something” scenario and includes traffic from the Do-Nothing scenario and traffic associated with the proposed development as well as traffic associated with cumulative developments in the wider area.

Further detail on the modelling scenarios can be found in the Traffic and Transport Assessment prepared by Traffic Insights and submitted with this planning application. The traffic data is detailed in Table 8.3. Only road links that met the TII scoping criteria were included in the modelling assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location.

Table 8.3: Traffic Data used in Operational Phase Climate Assessment

Road Number	Road Name	Speed (kph)	Base Year	Opening Year		Design Year	
				Do Nothing	Do Something	Do Nothing	Do Something
			LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
1	Link 1 R122(NNE)	60	12768 (293)	13231 (312)	10915 (74)	14998 (406)	17191 (447)
2	Link 2 R122 (SSW)	60	14791 (455)	15329 (484)	4565 (76)	17375 (630)	22936 (757)
3	Link 3 R122(NNE)	60	11436 (99)	11851 (106)	8776 (172)	13433 (138)	12372 (97)
4	Link 4 L1130	60	3131 (121)	3245 (129)	9402 (199)	3678 (168)	0 (0)
5	Link 5 Boulevard Rd	50	2130 (71)	2207 (76)	4237 (132)	2502 (98)	4860 (98)
6	Link 6 R122(NE)	50	6148 (162)	6371 (172)	12698 (478)	7222 (224)	9626 (224)

Road Number	Road Name	Speed (kph)	Base Year	Opening Year		Design Year	
				Do Nothing	Do Something	Do Nothing	Do Something
			LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
7	Link 7 R122 (W)	60	7363 (187)	7630 (199)	3344 (0)	8649 (259)	10420 (259)
8	Link 8 Hamlet Lane	60	2761 (124)	2861 (132)	2991 (0)	3243 (171)	4619 (171)
9	Link 9 R122 (W)	60	10852 (449)	11246 (478)	0 (0)	12747 (622)	14199 (622)
10	Link 10 Site Access (N)	50	0 (0)	0 (0)	0 (0)	0 (0)	3344 (0)
11	Link 11 Site Access (W)	50	0 (0)	0 (0)	14998 (406)	0 (0)	2991 (0)

Operational Phase Energy Use

The EU guidance (European Commission, 2013) also states indirect GHG emissions because of a development must be considered, which includes emissions associated with energy usage. The quantification of operational energy usage is out of scope of this assessment due to user variability, however information on the proposed energy strategy for the development was obtained from the Climate Action Energy Statement Report prepared by ENX (2025). Several measures in relation to sustainable energy usage have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation.

8.2.2.3 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on ISEP guidance (ISEP, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

The 2022 ISEP Guidance (ISEP, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. Therefore, the significance of a project's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors (i.e. Ireland's National GHG targets). In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended TII significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII, 2022a) states that professional judgement must be considered when contextualising and assessing the significance of a project's GHG impact. TII reference the ISEP guidance (ISEP, 2022) which states that the crux of assessing significance is *“not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”*.

Significance is determined using the criteria outlined in Table 8.4 (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 8.4: GHGA Significance Criteria

Effects	Significance Level	Description
Significant Adverse	Major Adverse	• The project's GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	• The project's GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	• The project's GHG impacts are mitigated through 'good practice' measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	• The project's GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	• The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development

GHG emissions to the relevant carbon budgets (Government of Ireland, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2025, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan. The aim of the carbon budgets is to ensure we are on a trajectory to meet the National Climate Objective of Net Zero by 2050.

8.2.3 CLIMATE CHANGE RISK ASSESSMENT (CCRA)

As per the TII PE-ENV-01104 guidance (2022a), an initial screening of risk during the operational phase is conducted. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development-by-development basis.

- **Asset Categories:** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards:** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

First an initial screening of physical hazards is carried out based on the proposed site location (see Table 8.12). This is a qualitative screening which intends to only proceed with relevant hazards (e.g., sea level rise is not an applicable hazard to inland areas or wildfire is not considered a hazard in an urban location). Following this all relevant hazards are assessed on their exposure under future climate change.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** - The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** - It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low Sensitivity** - It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure:** It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure:** It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure:** It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

8.2.3.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards.

$$\text{Vulnerability} = \text{Sensitivity} \times \text{Exposure}$$

The vulnerability assessment takes any proposed mitigation into account. Table 8.5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the proposed development can be considered as not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 8.5: Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 – Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

The screening CCRA, detailed in Section 8.4.3.3 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 as outlined in Section 8.5.2

8.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

PE-ENV-01104 (TII, 2022a) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

8.3.1 CURRENT GHG BASELINE

Data published in July 2025 (EPA, 2025a), indicates that Ireland exceeded, without the use of flexibilities, its 2024 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 1.03 MtCO₂e. However, the 2024 emissions represent the second consecutive year in which Ireland's emission were

below (-4.2%) 1990 levels. ETS (Emissions Trading Scheme) emissions decreased (-7.4%) and ESR (Effort Sharing Regulation) emissions decreased (-0.5%). Ireland's target is an emission reduction of 626 kt of CO₂e by 2030 on an average baseline of 2016 to 2018.

The EPA estimate that 2024 total national GHG emissions, excluding LULUCF, have decreased by 2.0% on 2023 levels to 53.75 Mt CO₂e, with a 0.7 Mt CO₂e (-8.9%) reduction in electricity industries alone. This was driven by a 39.6% share of energy from renewables in 2024 and the complete phase-out of peat for electricity generation. Manufacturing combustion and industrial processes decreased by 4.6% to 6.0 Mt CO₂e in 2024 due to declines in fossil fuel usage. The sector with the highest emissions in 2024 was agriculture at 38% of the total, followed by transport at 21.7%. For 2024, total national emissions (including LULUCF) were 57.64 Mt CO₂e (EPA, 2025a) (Table 8.6).

The current estimates of National greenhouse gas emissions (including LULUCF) in 2024 are 12.0% below 2018, well off the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021-2024 Ireland has used 82.8% of the 295 Mt CO₂e Carbon Budget for the five-year period 2021-2025. This leaves 17.5% of the budget available for 2025, requiring a substantial 10.3% annual emissions reduction for 2025 to stay within budget.

Table 8.6: Trends in Total National GHG Emissions 2021 – 2024

Sector ^{Note 1}	2021	2022	2023	2024	Total Budget (Mt CO ₂ e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2023 to 2024
Electricity	9.89	9.69	7.57	6.95	40	85.25%	-8.19%
Transport	11.09	11.76	11.8	11.65	54	85.74%	-1.27%
Buildings (Residential)	6.87	5.75	5.35	5.61	29	81.31%	4.86%
Buildings (Commercial and Public)	1.44	1.45	1.39	1.49	7	82.43%	7.19%
Industry	7.09	6.62	6.31	6.01	30	86.77%	-4.75%
Agriculture	21.94	21.78	20.72	20.41	106	80.05%	-1.50%
Other ^{Note 2}	1.86	1.93	1.81	1.63	9	80.33%	-9.94%
LULUCF	4.63	3.98	3.89	3.89	–	–	0
Total including LULUCF	64.81	62.96	58.84	57.64	295	82.81%	-2.04%

Note 1: Reproduced from latest emissions data from the EPA (EPA, 2025a).

Note 2: Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

8.3.2 FUTURE GHG BASELINE

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022a) and ISEP Guidance (ISEP, 2022) the future baseline is a trajectory towards net zero by 2050, “*whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*”.

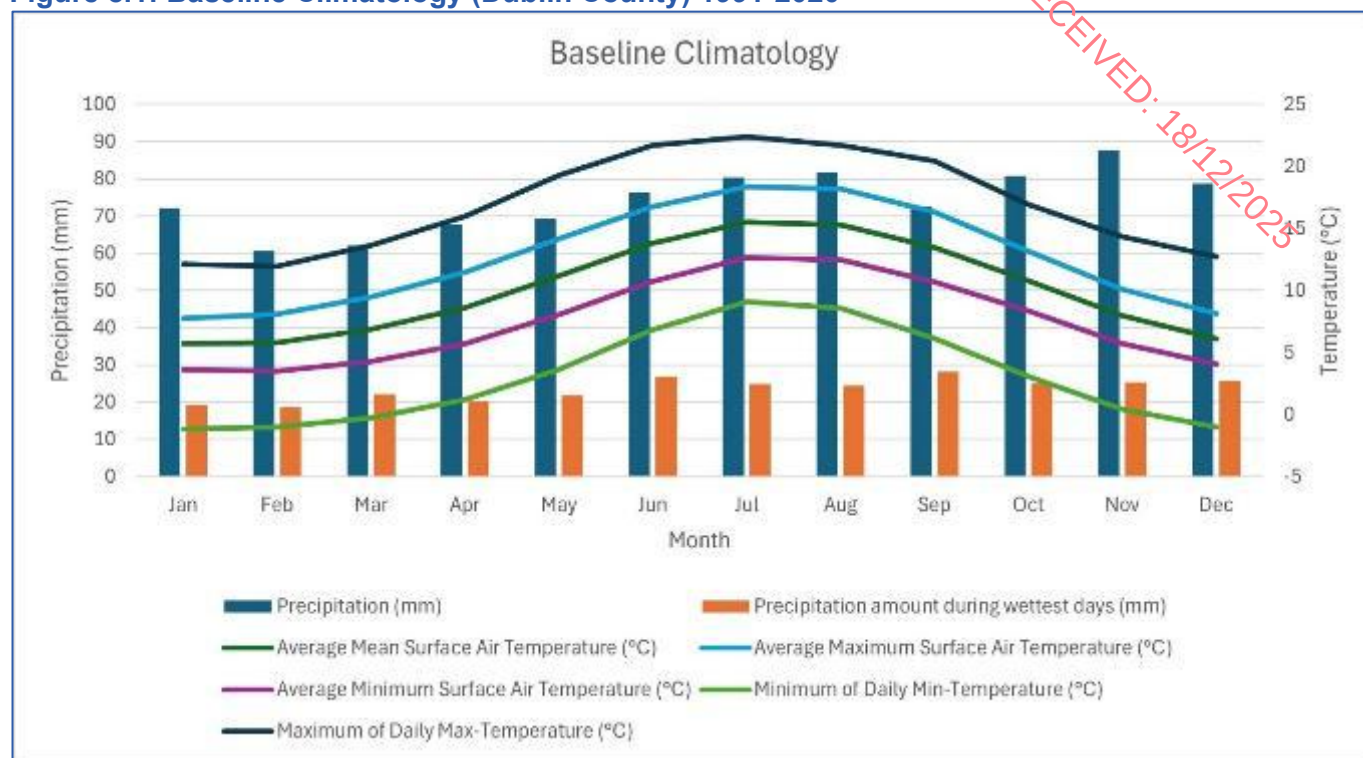
The future baseline will be determined by Ireland meeting its targets set out in the CAP25, and future CAPs, alongside binding 2030 EU targets. The European Union (EU) enacted 'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013' (hereafter referred to as the Regulation) (European Union, 2018) to meet the commitments under the Paris Agreement. 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 ETS and non-ETS greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

In May 2025, the EPA released the report *Ireland's Greenhouse Gas Emissions Projections 2024-2055* (EPA, 2025b), which includes total projected emissions and a breakdown of projected emissions per sector under the 'With Existing Measures' and 'With Additional Measures' scenarios. The EPA projections indicate that 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.

8.3.3 CURRENT CCRA BASELINE

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and relatively cooler summers when compared with continental Europe. This baseline data is derived from the European Centre for Medium-Range Weather Forecasts (ECMWF) ERA5 data reanalysis (ECMWF, 2023) which includes observed data from individual meteorological weather stations across Ireland from 1950-2023 such as that at Dublin Airport. This data is reanalysed to model a complete picture of Ireland's historical climate. This method has been chosen to ensure data can be analysed at the daily level and harmoniously compared with future scenarios. The baseline time-period referred to in this assessment was from 1991-2020 and is specific to county Dublin and the location of the development in question.

Figure 8.1 below shows the climatology for the 30-year baseline period from 1991 to 2020 indicating the wettest months are from October through to January with November (87mm) being the wettest on average. July and August are also markedly wetter than other months both <80mm on average. Spring and Summer (Feb-Jun) are markedly drier compared to the wettest months with average monthly precipitation 60mm-76mm respectively. The driest month on average was February (60mm), with March through to May also experiencing lower than average rainfall (~64mm). Ireland and Dublin's precipitation patterns are strongly influenced by its oceanic climate, with the wettest months typically coinciding with periods of frequent low-pressure Atlantic storm systems. In the cases of July and August however, this may be a factor of convection and frontal rainfall, whereby warm continental summer air is pressed against colder air moving across the Atlantic.

Figure 8.1: Baseline Climatology (Dublin County) 1991-2020

July was the warmest month with a mean temperature of 15.5°C with average mean surface temperatures across the summer months (July – August) >13°C. July is also the warmest month for maximum daily temperatures (22°C) which showcases the higher value ranges recorded during a particular month. Across May – September average maximum daily temperatures exceed 19°C.

January and February are the coldest months with average mean surface air temperatures of 5.7°C and average minimum temperatures of 3.3-3.6°C. For daily minimum temperatures which reference the lowest range values (10th percentile range) of the data, January (-1.9°C) and February (-1.0°C) also remain the coldest with marginal difference. Several other winter and early spring months (December - March) also experience daily minimums of below 0°C.

Historical records show Dublin has experienced several severe storms, with wind speeds exceeding 100 km/h, including a record set during Storm Éowyn in January 2025, which reached 142 km/h in Galway. Storm activity is concentrated in winter (December–February), with an average of eight named storms annually (Met Éireann, 2025). Analysis of data from Dublin Airport (1962–2020) indicates a mean 10m wind speed of 10 knots (18 km/hr) and maximum gusts ≥60 knots (111 km/h).

Overall, the baseline climatology for the project site and region shows evidence of high rainfall across the year high. Mild winters with average minimums >3°C and relatively mild summers with average maximums of 18°C however, this maximum is not significant for extreme heat or prolonged drought impacts.

8.3.4 FUTURE CCRA BASELINE

Climate Change Impacts and Projections for Ireland

Ireland is already experiencing increased annual rainfall in the north and west, with more variable patterns in the south and east including the area of the proposed development (EPA, 2021b). Key risks identified by the EPA relevant to the proposed project include:

- Increased likelihood of more frequent and intense North Atlantic low-pressure systems bringing high rainfall and high winds.
- More intense rainfall periods which may lead to pluvial flooding and elevated fluvial levels.
- Longer dry spells and increased temperatures.
-

Climate Modelling and Planning

International best practice and national policy such as the NCCRA (2024), and Transport Infrastructure Ireland (TII, 2022a) recommends using two emission scenarios to project future climate change. This includes a moderate and high emission scenarios (RCP4.5 and RCP8.5) for future planning. These Representative Concentration Pathways (RCPs) reflect varying levels of global climate mitigation and are explained below.

- **RCP 4.5** (a 'moderate' scenario) represents an approximate 2.4°C increase in global average temperatures (1.7-3.2°C). It assumes moderate mitigation efforts leading to stabilisation of emissions by mid-century and is generally aligned with current policies for emission reduction.
- **RCP 8.5** (a 'worst case' / high emissions scenario) represents an approximate 4.3°C increase in global average temperatures (3.2-5.4°C) and assumes continued high emissions with minimal mitigation. This high-end scenario is useful for understanding potential impacts of current emission trends continue. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

This climate change assessment uses the latest climate change projections standardised and bias corrected for Ireland available through the EPA and the TRANSLATE project (EPA, 2025b).

8.3.4.1 Key Findings from Climate Projections

Projected changes include:

- Summer temperatures rising by over 2°C and overall mean temperatures increasing 0.7°C and 3°C by mid-century under RCP4.5 and RCP8.5 respectively.
- Summer rainfall decreasing while winter rainfall increasing sharply, attributing to an overall increase in rainfall annually for the site location.
- Fewer cold winter nights and more frequent short heatwaves (≥ 5 days $> 25^\circ\text{C}$).
- Increased likelihood of dry spells and drought which may elevate the risk of wildfire.
- Increased likelihood of more storms which may increase the risk of coastal flooding.

Table 8.7: Site Specific - Future Climate Change Summary of Projections under both RCP scenarios for 2050 period (2040-2070) taken from the EPA climate Ireland Translate Projections.

Climate Hazard	Indicator	Baseline	RCP4.5 (2040-2070)	RCP8.5 (2040-2070)
Temperature	<i>Mean temp (°C)</i>	10.0	10.9	11.4
	<i>Mean Max temp (°C)</i>	12.6	14.2	14.7
	<i>Mean Min temp (°C)</i>	7.4	7.2	8.1
	<i>Average of Daily Max temp (°C)</i>	22.4 (July)	26.7	27.4
Precipitation and Flooding	<i>Annual precipitation (mm)</i>	889	773 (-116)	793 (-96)
	<i>Max 1-day (mm)</i>	27	37	40

Climate Hazard	Indicator	Baseline	RCP4.5 (2040-2070)	RCP8.5 (2040-2070)
Storms and high winds	<i>Number of Storms Qualitative (Description)</i>	On Average 8 named storms annually with speeds exceeding 100km/hr ^(N.1)	Winter storm frequency is projected to increase, with a possible extension of the storm season. While the intensity of individual storms cannot be accurately projected, wind speeds are likely to remain above 100 km/hr.	
	<i>Average Max Gust (Knots)</i>	60		
Drought	<i>Absolute Drought (≥15 days with less than 1mm)</i>	Rare	Marginal increase	Increased Likelihood
Lightning	<i>Qualitative (Descriptive)</i>	Occurring during summer periods	This hazard may modestly increase in the future due to more favourable conditions, such as rising temperatures and extended warm periods beyond the traditional summer season	
Note1: Data from combined Met Éireann, UK Met Office and Dutch Meteorological services.				

Impacts resulting from climate change hazards will evolve and have the potential to include increases in global temperatures and increases in the intensity and frequency of rainfall days per year combined with increases in the intensity and frequency of low-pressure systems in the north Atlantic during the winter storm period. Therefore, it is expected that the climate over the proposed development site in Dublin will evolve over time and consideration is needed with respect to this within the design of the proposed development.

8.4 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

8.4.1 DO-NOTHING SCENARIO

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area, including influences from potential new developments in the surrounding area, changes in road traffic, etc.

As the site is zoned for development, it is likely that in the absence of the proposed development a development of a similar nature would occur in the future. Therefore, the predicted greenhouse gas emissions associated with the construction and operation phases are likely to occur regardless of the specific proposed development. Climate change is being driven by broader, long-term global trends in greenhouse gas concentrations, which will continue irrespective of any localised development. This assessment focuses on the contribution of the proposed development to the overall emissions and considers mitigation measures to minimise its climate impact.

8.4.2 GREENHOUSE GAS ASSESSMENT

8.4.2.1 Construction Phase

The most significant proportion of GHG emissions tend to occur during the construction phase as a result of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has been included in the construction phase assessment for the purposes of the EIAR. The assessment is broken down into the following stages as per Section 8.2.2:

- Stage A1 – A3: Product Carbon;
- Stage A4 – A5: Construction Carbon;
- Stage B1 – B5: In Use Carbon;
- Stage C1 – C4: End of Life Carbon; and
- Biogenic Carbon.

Glenveagh's calculated kgCO₂e/m² for the building units in conjunction with the schedule of areas supplied by the project architects, allowed a site-specific carbon figure for the building elements of the project to be calculated. The carbon figure associated with the creche units were calculated using One Click LCA. Additionally, the TII Carbon Tool was utilised to calculate GHG emissions associated with the non-building elements including materials for infrastructure works, site preparation works, landscaping and waste materials.

It is estimated that the proposed development will result in total embodied carbon emissions of 52,537 tCO₂e (Table 8.8). Table 8.8 should be read in conjunction with Table 8.14 in Section 8.12 as due to methods of calculation, some activities (construction and operation) are already accounted for within other categories. Others, such as those within operational emissions have been excluded from the assessment due to significant variability in user emissions.

Table 8.8: GHG Assessment Results

GHG Assessment Category	Predicted Development GHG Emissions (tCO ₂ e)	% of Total
Buildings	44,759	85.20%
Materials	4,517	8.60%
Material transport	1,922	3.66%
Clearance and demolition	11	0.02%
Land use change and vegetation loss	-	0.00%
Excavation	69	0.13%
Construction energy	408	0.78%
Construction worker travel to site	851	1.62%
Construction waste disposal	See Table 8.14	0.00%
Construction waste transport	See Table 8.14	0.00%
Construction water	See Table 8.14	0.00%
Total construction GHG emissions	52,537	
Total project biogenic carbon	- 5,266	
Avoided emissions	-43	

The GHG emissions associated with the buildings make up the majority (85%) of the total GHG emissions for the project. As per the LCA completed on the typical house types the majority (75%) of the carbon emissions are linked to the sub and superstructures. The product stage (A1 – A3) contribute the most to the overall carbon result followed by in use emissions (B1 – B5), primarily B4 replacement.

Seven key materials were identified in the assessment of the house units that together make up 89% of Stage A – C emissions: concrete; MEP (mechanical, electrical and plumbing); plastic; windows; boards; timber; and insulation.

For the apartment blocks the LCA undertaken determined that concrete contributes the highest share to the total emissions followed by steel and MEP.

Efforts to reduce the quantity of these materials used or swap them for lower carbon alternatives will impact on the carbon footprint of the units. It is important to highlight that although the timber framework forms a significant part of the structural skeleton of the house units; it is not as carbon intensive as other materials.

Both the Climate Change Advisory Council (CCAC) and CAP25 advise for the use of timber framed buildings as a construction method. Timber frames have the additional benefit of having absorbed carbon from the atmosphere during their growth and providing a long-term carbon sink during their lifetime in the building.

The LCA found that a reduction of 21% of total embodied carbon emissions (A – C stages) can be utilised for the biogenic carbon associated with the proposed development house types and a figure of 3% can be used for apartment blocks. This represents carbon savings of 5,266 tCO₂e for the proposed housing units and apartment blocks.

Reusing excavated material on site avoids the GHG emissions associated with transporting and disposing of it at landfill. This has resulted in a saving of 43 tCO₂e.

The predicted emissions for the proposed development are annualised over the assumed 50-year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets. In Table 8.9, GHG emissions have been compared against Ireland's total GHG emissions in 2024 (the existing baseline) and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (27.7 Mt 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 0.0018% of Ireland's total GHG emissions in 2024 and 0.0038% of Ireland's non-ETS 2030 emissions target.

Table 8.9: Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Predicted Development GHG Emissions (tCO ₂ e)		Annualised Development GHG Emissions (tCO ₂ e)	Target/Sectoral Budget (tCO ₂ e)		Annualised Emissions as % of Relevant Target
52,537	Total Project Stage A - C GHG Emissions	1,051	Ireland's 2024 Total GHG Emissions (existing baseline)	57,640,000	0.0018%
			Non-ETS 2030 Target	27,722,000	0.0038%
-5,266	Total Project Biogenic Carbon	-105	-	-	-

The results of the lifecycle assessment for the housing units can be compared with a number of industry benchmarks to demonstrate the carbon impact of the development (Table 8.10).

The Royal Institute of the Architects of Ireland (RIAI) 2030 Climate Challenge embodied carbon benchmarks for small scale residential developments were used for comparison with the predicted lifecycle carbon for the proposed development units. The proposed development house types will achieve the RIAI 2025 target of <800 kgCO₂e/m² and the 2030 target of <625 kgCO₂e/m² based on the predicted figure of 500 kgCO₂e/m² for the house types.

RIAI have a 2030 higher target of <450 kgCO₂e/m². Based on the current assessment the predicted figure of 500 kgCO₂e/m² for the housing units is not currently meeting this higher target. However, it is close to this target and given the ongoing commitment to sustainable development that the project developer (Glenveagh Properties) has it is likely that in the future this higher target can be achieved.

The London Energy Transformation Initiative (LETI) Climate Emergency Design banding system for residential properties was also used for comparison with the house units.

The LCA carbon intensity of 500 kgCO₂e/m² (stage A – C) and upfront carbon (A1 – A5) of 356 kgCO₂e/m² indicates that the house units are within the LETI B band. According to the LETI carbon alignment document, banding B is considered a robust target performance.

Table 8.10: Comparison Against Industry Embodied Carbon Benchmarks

Metric	Glenveagh Embodied Carbon (kgCO ₂ e/m ²)	Target	Target Achieved
RIAI 2025 Target (Embodied Carbon (A – C) kgCO ₂ e/m ²)	500	<800	Y
RIAI 2030 Target (Embodied Carbon (A – C) kgCO ₂ e/m ²)	500	<625	Y
RIAI 2030 Higher Target (Embodied Carbon (A – C) kgCO ₂ e/m ²)	500	<450	N
LETI Embodied Carbon Band B – Upfront Carbon	356	400	Y
LETI Embodied Carbon Band B – Lifecycle Embodied Carbon	500	625	Y

8.4.2.2 Operational Phase

Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. Several measures have been incorporated into the design to ensure the operational phase emissions are minimised. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 8.5.2 and are based on information provided by ENX in the Climate Action and Energy Statement report.

Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Chapter 4 of this EIAR for further details). The predicted concentrations of CO₂e for the future years of 2027 and 2042 are detailed in Table 8.11.

These are significantly less than Ireland's national 2030 target set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2027 the proposed development will increase CO₂ emissions by 50 tonnes CO₂e. This equates to 0.0001% of the 2030 national emission ceiling or 0.001% of the 2030 Transport sector emissions ceiling. Similarly low increases in CO₂ emissions are predicted to occur in 2042 with emissions increasing by 18 tonnes CO₂e. This equates to 0.0001% of the 2030 national emission ceiling or 0.0003% of the 2030 Transport sector emissions ceiling.

Table 8.11: Traffic Emissions GHG Impact Assessment

Year	Scenario	CO ₂ e (tonnes/annum)
2027	Do Nothing	1,402
	Do Something	1,452
2042	Do Nothing	938
	Do Something	956
Increment Change in 2027		50

National Emission Ceiling 2027 (Tonnes) Note 1	37,869,352
Impact in 2027 (as % of national emissions ceiling)	0.0001%
Transport Sector 2030 Emission Ceiling	6,000,000
Impact in 2027 (as % of transport sector emissions ceiling)	0.001%
Increment Change in 2042	18
National Emission Ceiling 2030 (Tonnes) Note 1	27,722,000
Impact in 2042 (as % of national emissions ceiling)	0.0001%
Impact in 2042 (as % of transport sector emissions ceiling)	0.0003%
Note 1 Target under Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council.	

8.4.2.3 GHGA Significance of Effects

The TII guidance 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 8.5 has been considered when determining the significance of the proposed development's GHG emissions. The proposed development has mitigated some GHG impacts where possible. According to the TII significance criteria described in Section 8.2.2.3 and Table 8.4, the significance of the GHG emissions during the construction and operational phase is minor adverse. The project is aligned with the following criteria from Table 8.4:

- The project's GHG impacts are mitigated through 'good practice' measures.
- The project has complied with existing and emerging policy requirements; and
- Fully in line to achieve Ireland's trajectory towards net zero.

In accordance with the EPA guidelines (EPA, 2022), this equates to a **direct, long-term, negative** and **slight** effect, which is overall **not significant** effect of GHG emissions during the construction and operational phase.

8.4.3 CLIMATE CHANGE RISK ASSESSMENT

8.4.3.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out. 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 8.5.

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding.
- Increased temperatures potentially causing water scarcity and prolonged periods of hot weather
- Reduced temperatures resulting in ice or snow and [possible hazard to working conditions].
- Major Storm Damage, including wind damage and coastal flooding from storm surge.
- Wildfire resulting from dry spells and elevated temperatures

8.4.3.2 Operational Phase

To determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. Table 8.12 presents the initial qualitative climate hazards screening relevant to the proposed development. A number of climate hazards have been screened out of the assessment due to the proposed development location.

Table 8.12: Climate Hazard Screening

Climate-related Hazard	Hazard Screening Rationale	Screening
Extreme Heat temperatures	High temperatures are a key consideration for both construction and long-term operation of the proposed project. Historical data shows rising temperatures in Ireland. Heat and thermal expansion can damage buildings, materials, and road surfaces, and affect the lifecycle of assets.	Screen in
Extreme Cold Temperature	Snow and ice events pose significant risks to health, safety, and site operations. Road access may be disrupted, and low temperatures can affect assets such as fuel tankers, workers, and infrastructure. Freeze-thaw cycles may cause cracking in concrete and road surfaces, requiring snow clearance and ice management.	Screen in
High precipitation and pluvial flooding	Surface water remains a key vulnerability for any proposed development during both construction, and operational phases due to the sensitivity of construction materials, site access, and site assets to water exposure.	Screen in
Fluvial flooding	The development site 2.2km from a fluvial watercourse and this is not considered a hazard for the site.	Screen out
Drought	Droughts have occurred across Ireland, previously impacting water supply. Future reductions in availability would directly impact the development and its operation.	Screen in
Wildfire	The area surrounding the site is largely urban and wildfire is not considered a risk for this development.	Screen out
High winds and storms	While the site itself isn't significantly elevated, existing and proposed assets and design components may be exposed to high winds. Historically, Ireland has experienced several notable storm events including Storm Éowyn and Storm Darragh (2024), which caused widespread damage across Ireland. These storms often bring heavy rainfall and flood warnings, increasing overall risk.	Screen in
Fog	Fog is not considered a significant hazard for this development, as it does not involve transport, aviation, or activities requiring high visibility.	Screen out
Lightning	The proposed design is not elevated, and no extra risk is considered above what already exists under the existing design codes of the site and buildings	Screen out
Landslides and Subsidence	The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2025) was reviewed to determine the low risk from landslides at the proposed development location. Consideration has been given to subsidence and adequate engineering measures are in place to ensure stability.	Screen out
Sea level rise and coastal flooding	The location of the development is a considerable distance from the coast and not exposed.	Screen out

8.4.3.3 Climate Change Vulnerability Assessment

The sensitivity and exposure of the development to the screened in climate hazards must first be determined to then determine the vulnerability of the proposed development to climate change. Flooding (pluvial), extreme heat, extreme cold, wildfire, and extreme wind, have been considered as climate hazards in the context of the proposed development.

The sensitivity of the proposed development to the climate hazards is assessed irrespective of the project location. Table 8.13 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been determined, the exposure of the proposed development to each of the climate hazards is determined, this reflects on the possible likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards. The results of the vulnerability assessment are detailed in Table 8.13.

Table 8.13: Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Pluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	2 (Medium)	2 (Low)

The sensitivity and exposure of the area was determined with reference to several online tools and with input from the various discipline specialists on the project team. It was concluded that the proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low.

Flooding

Future increases in rainfall due to climate change may elevate the risk of surface water (pluvial) flooding; however, fluvial flooding is not considered a risk as the proposed development is located a significant distance from any fluvial watercourse. A Site-Specific Flood Risk Assessment (FRA) was completed by Paul McGrail Associates in 2025 and concluded that the site is not at risk of flooding and lies within Flood Zone C, which is appropriate for residential development under the Planning System and Flood Risk Management Guidelines (November 2009). The Minimum Finished Floor Level is set at 41.300m O.D., approximately 15m above the 0.1% AEP event, ensuring compliance with the Sequential Approach and achieving the 'Avoid' principle. The nearest river, Bracken River, is located approximately 2.2 km south of the site.

The proposed development integrates extensive nature-based solutions and Sustainable Urban Drainage Systems (SuDS) to manage surface water effectively and enhance climate resilience. These include permeable paving, rainwater butts, swales, rain gardens, and attenuation ponds within public realm areas. Collectively, these measures provide robust mitigation against pluvial flooding while supporting biodiversity and sustainable water management across the site.

Extreme Temperatures (Heat & Cold)

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the building materials and some related infrastructure. However, building materials will be selected which meet the relevant design standards and which accommodate high and low extreme temperatures. The likelihood of extreme cold events in the future is projected to decrease reducing their overall exposure and risk. Extreme heat (+30°C) is equally unlikely and building design has incorporated these considerations with thresholds for materials accommodating these extremes. Therefore, both extreme temperatures (cold and heat) are not considered a significant risk.

High Winds and Storms

In relation to extreme winds, the buildings shall be designed to the appropriate standards to account for the relevant wind loading events for RCP4.5 and RCP8.5. If required as part of the building design,

lightning protection shall be provided but this assessment concludes that lightning is not considered a risk to the site.

Drought

This development requires water for its operation. Future projections do show an increased likelihood of water scarcity however, when matched with increases in rainfall throughout the year the overall impact of water scarcity events is considered low. The selection of landscape vegetation has considered irrigation needs and possibility of plant die off from drought and chosen native plant species with lower irrigation needs to ensure SuDs and green Space function as normal in dry spells.

Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

8.4.3.4 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development due to climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development due to climate change during the operational phase are **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

8.5 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

8.5.1 INCORPORATED DESIGN MITIGATION

Several measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, integration of SuDs and nature based solutions to adequately dispel water and reduce the runoff rate of rainfall into drainage systems resulting in a robust flood management and drainage design. These measures have been considered when assessing the vulnerability of the proposed development to climate change (Section 8.5.1). Landscaping planting elements have been chosen with consideration for climate change impacts in future years.

In relation to operational energy usage information from the Climate Action and Energy Statement prepared for the proposed development has been used to inform this assessment. The proposed development will be Nearly Zero Energy Building (NZEB) compliant in line with the *Technical Guidance Part L (2022) of the Building Regulations* requirements for the residential elements and Technical Guidance Part L (2022), buildings other than Dwellings for the creche and pavilion. As per the Climate Action and Energy Statement the following key elements will be included in the design parameters.

The following key design measures will be implemented to minimise operational energy demand and associated carbon emissions:

1. Passive Design Strategies

a) Enhanced Building Fabric Performance:

- Apartments: Walls – 0.18 W/m²K; Roof – 0.16 W/m²K; Floor – 0.15 W/m²K
- Houses: Walls – 0.14 W/m²K; Roof – 0.15 W/m²K; Floor – 0.12 W/m²K

b) High-Performance Glazing: Windows with U-value of 1.2 W/m²K and a minimum solar factor of 0.7 or better)

c) Air Permeability Targets:

- Apartments: $\leq 3 \text{ m}^3/\text{hr}/\text{m}^2$
- Houses: $\leq 0.25 \text{ m}^3/\text{hr}/\text{m}^2$

d) Thermal Bridging: Y-factor of 0.15 with detailed attention to linear thermal bridge detailing.

2. Building Services and Energy Systems

a) Heating and Hot Water:

- Apartments: Exhaust air heat pumps, with radiator heating and 180L hot water cylinders.
- Houses: Air to water heat pumps with radiator heating and 200L hot water cylinders.

b) Lighting:

- 100% energy-efficient lighting in all residential units with provision for Compact Fluorescent Lamps (CFLs).

3. Energy Performance Targets

a) Building Energy Ratings (BER): A2 for residential units (apartments and houses) and A3 for commercial units.

b) Energy Performance Coefficients (EPC):

- < 0.3 for residential units
- < 1.0 for commercial units

c) Carbon Performance Coefficients (CPC):

- < 0.35 for residential units
- < 1.15 for commercial units

d) Renewable Energy Ratio (RER): Minimum of 0.2 across all unit types.

These measures are aligned with the objectives of the CAP25 and will contribute to reducing the operational carbon footprint of the development, ensuring long-term energy efficiency and environmental sustainability. These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the CAP25.

8.5.2 CONSTRUCTION PHASE

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Sourcing materials locally where possible to reduce transport related CO₂ emissions.

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- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible. For example, a 30% minimum clinker replacement in cement may be utilised in line with the requirements for public bodies.

The project developer, Glenveagh Properties, has committed to achieving Net Zero by 2050 across its whole business. Therefore, the proposed development will be built with carbon reduction and sustainability in mind and will include reductions of embodied emissions during the construction phase. Glenveagh Properties have published a Net Zero Transition Plan and Annual Reports which detail a commitment to achieving Net Zero by 2050.

The above listed measures are supported by Glenveagh Properties PLC's Net Zero Transition Plan 2023, published in March 2023, which identifies the sources of Glenveagh Properties PLC's emissions and proposed measures to reduce these. A commitment to achieve a 55% reduction in Scope 3 (construction methods) emissions intensity (tCO₂e per 100 m² of complete floor area) by 2031 (using 2021 as the baseline year) will involve supplier engagement to make informed procurement decisions, engaging with subcontractors to support their transition to less carbon intensive fuels (diesel and gas oil is currently the norm) and investing in innovation of designing and building homes to reduce their associated embodied carbon. A reduction target of 46.2% by 2031 is also set in the plan for Scope 1 and 2 emissions (company operations). All targets have been validated by the Science Based Targets initiative (SBTi).

The Science Based Targets initiative (SBTi) is a corporate climate action organisation, incorporated as a charity, which develops standards, tools and guidance enabling companies to set GHG emissions reductions targets in line with net-zero by 2050 at the latest. Science-based targets show companies and financial institutions how much and how quickly they need to reduce their GHG emissions to prevent the worst effects of climate change (SBTi, 2024a). Glenveagh Properties PLC is one of the over 4,000 companies and financial institutions who have had their emission reduction targets validated by the SBTi (Glenveagh's targets can be searched in the SBTi's target dashboard (SBTi, 2024b)).

Glenveagh Properties PLC's Full Year 2024 Results, published in March 2025, identified that Scope 3 emissions are 7% below the 2021 baseline, measured on an intensity basis (tCO₂e per 100m²). This is primarily due to the focus on the energy efficiency of the residential units. Scope 1 and 2 emissions decreased by 47% compared to 2021 baseline, which can be attributed to the first full year HVO (hydrotreated vegetable oil) was used across all sites as a replacement to diesel.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lightning and hail through site risk assessments and method statements.

Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed, e.g. the EU Commission Technical Guidance on Adapting Buildings to Climate Change (European Commission, 2021a), LETI emergency design guide (LETI, 2020), and the latest IPCC report.

8.5.3 OPERATIONAL PHASE

The proposed development has been designed to reduce the impact on climate due to energy usage during operation. These measures are outlined in Section 8.5.1 above as incorporated design mitigation. No further operational phase mitigation is proposed.

8.6 RESIDUAL IMPACTS

The impact to climate due to a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII reference the IESP guidance which states that the crux of assessing significance is “*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*”. The proposed development has proposed best practice mitigation measures (as outlined in Section 8.5) and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 8.4 the residual impact of the proposed development in relation to GHG emissions is considered minor adverse, this equates to a **direct, long-term, negative** and **slight**, impact which is overall **not significant** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development due to climate change. The residual effect of climate change on the proposed development is considered **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

8.7 MONITORING

Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the proposed development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the proposed development is not meeting its targets, further mitigation will be put in place.

Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

8.8 REINSTATEMENT

There is no reinstatement applicable to the climate assessment.

8.9 INTERACTIONS

Climate has the potential to interact with several other environmental attributes.

8.9.1 LAND, SOILS, GEOLOGY AND HYDROLOGY

The impact of flood risk has been assessed, and the surface water drainage network has been designed to cater for increased rainfall in future years due to climate change. The effect of the interactions between climate and land, soils, geology and hydrology are **direct, short-term, negative and imperceptible** during the construction phase and **direct, long-term, negative and imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

8.9.2 AIR QUALITY

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling

outputs are utilised within the Climate Chapter. There is **no impact** on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

8.9.3 TRAFFIC AND TRANSPORTATION

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO₂, a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are **direct, short-term, negative and not significant** during the construction phase and **direct, long-term, negative and not significant** during the operational phase, which is overall **not significant** in EIA terms.

8.9.4 MICROCLIMATE - WIND

There is the potential for the proposed development to be impacted by the local wind microclimate. More detail can be found in Ch. 18 Microclimate – Wind. This chapter identified no significant effects on the proposed development due to the wind microclimate. Therefore, in this assessment the effects of the interactions between microclimate - wind and climate are considered **direct, short-term, negative and imperceptible** during the construction phase and **direct, long-term, negative and imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

8.9.5 WASTE

Waste management measures (detailed in Ch. 20 Material Assets – Waste) will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered **direct, short-term, negative and not significant** during the construction phase and **direct, long-term, negative and not significant** during the operational phase, which is overall **not significant** in EIA terms.

8.10 INDIRECT AND/OR SECONDARY IMPACTS

8.10.1 GREENHOUSE GAS EMISSIONS

The GHG assessment considers both the indirect and direct emissions with respect to materials required to construct and operate the proposed development. Indirect, or scope 2 and 3 emissions, such as transportation of goods, waste, electricity and fuel have been included in the assessment where data is available (Table 8.14).

Mitigation measures to reduce secondary emissions such as operational phase traffic movements associated with the proposed development is mitigated through good practice measures to encourage use of active travel and public transport to the site. With mitigation measures put in place to minimise secondary emissions the effect is considered **long-term, direct, negative and slight**, which is overall **not significant** in EIA terms.

8.10.2 CLIMATE CHANGE RISK

Indirect or secondary impacts due to climate risk have the potential to occur where a proposed development increases the risk of a climate hazard outside of its own boundary. This may be increasing flood risk at nearby locations, supply chain disruptions (i.e. loss of power or water).

Where resilience to indirect impacts for such risks can be built into the proposed project, they have been reviewed and the existing resilience measures considered resilient. This includes the impact of the project

on flood risk outside of the redline boundary to ensure that the proposed project does not increase flood risk at other locations.

Indirect risks such as potential failures of the power or water network are outside the scope of the project. Critical infrastructure such as roads, water and power is undergoing risk assessment by their oversight bodies to add resilience to the networks in line. These risk assessments aim to pinpoint where the most significant risks are present to prioritise these for adaptation to future climate risk.

8.11 CUMULATIVE IMPACT ASSESSMENT

With respect to the requirement for a cumulative assessment the ISEP (ISEP, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that *“the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland’s ability to meet its national carbon reduction target. This assessment approach is considered inherently cumulative”*.

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area. Therefore, this impact assessment is cumulative. A full list of developments considered for the cumulative impact during the construction and operational phase of the development can be found in chapter 17 of the EIAR. All relevant developments and their cumulative impacts have been considered for the construction and operational phases.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

8.12 DIFFICULTIES ENCOUNTERED IN COMPILING

The proposed development is still in the design stage and therefore materials used, construction and operational activities are subject to change. Data assumptions for the GHG assessment are set out in Table 8.14. All assumptions follow a conservative approach.

Table 8.14: GHG Assessment Assumptions

GHG Assessment Category	Elements Considered
Buildings	Houses, apartments, duplex, creche
Materials	No available data. Pro-rated from a similar LRD based on hectares developed
Material transport	HGV and LGV trips during construction. Assumed 50km travel distance round trip.
Clearance and demolition	Site preparation and clearance
Land Use Change and Vegetation Loss	No emissions as agricultural land
Excavation	General excavation
Construction Energy	Generator, plant use and site office energy.
Construction worker travel to site	Car trips during construction assumed 30km round trip
Construction Waste Disposal	Majority of construction waste is recycled- In alignment with the GHG Protocol, emissions associated with recycling materials should be attributed with the new material that is made
Construction Waste Transport	Assumed included within transport of materials figure

GHG Assessment Category	Elements Considered
Construction water	No Data
Operational Energy	Significant variability in user emissions.
Operational transport	See traffic section
Operational Waste Disposal	Significant variability in user emissions.
Operational Waste Transport	Significant variability in user emissions.
Maintenance	Included in 'Building' category
Landscaping and Vegetation	No data
Operational Water	Significant variability in user emissions.
Avoided emissions	Excavated material reused on site would otherwise end up in landfill (50km roundtrip via 20t capacity HGV)

8.13 REFERENCES

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9.0 NOISE AND VIBRATION

9.1 INTRODUCTION

This chapter presents an assessment of the impacts of the proposed residential development at Flemington Lane, Balbriggan, Co. Dublin in terms of noise and vibration in the local environment. The assessment for noise and vibration is based on the most up to date applicable guidance and assessment documents available both nationally and internationally.

Noise and vibration will be considered in terms of two aspects. The first is the outward effect of the development (i.e. the potential effect of the buildings on existing sensitive receptors in the study area), and the second is the inward effect of the existing noise and vibration sources on the development itself.

9.1.1 STATEMENT OF AUTHORITY

This EIAR Chapter has been prepared by AWN Consulting Ltd. (AWN),

The chapter was prepared by Dylan Floyd (Acoustic Consultant). Dylan holds a BSc Agri-Environmental Science. Dylan has worked in the field of acoustics since 2022. He has completed noise monitoring campaigns across numerous sites and holds a certificate from the Institute of Acoustics in environmental noise monitoring and building acoustics testing.

This chapter was reviewed by Alistair Maclaurin BSc PgDip MIOA, Senior Consultant at AWN Consulting who has prepared multiple EIS and EIAR documents throughout his 13 years' experience as an environmental consultant

9.2 STUDY METHODOLOGY

The study has been undertaken using the following methodology:

- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- A baseline noise survey has been undertaken in the vicinity of the proposed development to characterise the prevailing noise environment;
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the proposed development at the nearest noise sensitive locations (NSLs) to the site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most NSLs surrounding the development site;
- An assessment has been completed of potential cumulative impacts that may arise as a result of the proposed development and other existing or proposed plans and projects;
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development; and
- The inward effect of noise from the surrounding environment into the proposed residential buildings has also been assessed to determine the requirements, for additional noise mitigation to ensure a suitable internal noise environment for residential amenity.

9.2.1 CONSTRUCTION PHASE

9.2.1.1 Criteria for Assessing Construction Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phases of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228 – 1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Noise*.

The approach adopted here calls for the designation of a NSL into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities, depending on context.

This document sets out a Construction Noise Threshold (CNT) relative to the existing noise environment. Table 9.1 sets out the approach.

Table 9.1: Example Threshold of Significant Effect at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A ^{Note A}	Category B ^{Note B}	Category C ^{Note C}
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends ^{Note D}	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

Note A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

For the appropriate assessment period (i.e. daytime in this instance), the ambient noise level is determined and rounded to the nearest 5 dB. If the construction noise exceeds the appropriate category value, then a significant effect is deemed to occur. It should be noted that this assessment method is only valid for residential properties and if applied to commercial premises without consideration of other factors may result in excessively onerous thresholds being set.

Proposed Threshold Levels for Noise

The proposed general construction hours are 07:00 to 19:00 hrs, Monday to Friday and 07:00 to 14:00 hrs on Saturdays. No working will be allowed on Sundays and Public Holidays. Taking into account the document outlined above (BS 5228-1:2009+A1:2014) and making reference to the baseline noise environment monitored around the development site (see Section 9.3), the Category A threshold from the ABC methodology is applied to all noise sensitive locations surrounding the site. The following threshold therefore applies for the proposed working hours:

- Monday to Friday - 07:00 to 19:00 hrs – 65 dB $L_{Aeq,12hr}$.

- Saturdays – 07:00 to 14:00 hrs – 65 dB LAeq,6hr.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of CNL, Table 9.2 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is taken from Table 3.16 of DMRB: Noise and Vibration (UKHE 2020) and adapted to include the EPA EIAR Guidelines.

Table 9.2: Construction Noise Significance Ratings.

Construction Noise Level Per Period	Guidelines for Noise Impact Assessment Significance (DMRB)	EPA EIAR Significance of Effects	Determination
Below or equal to baseline noise level	Negligible	Not Significant	Depending on CNT, duration & baseline noise level
Above baseline noise level and below or equal to CNT	Minor	Slight to Moderate	
Above CNT and below or equal to CNT +5 dB	Moderate	Moderate to Significant	
Above CNT +5 dB	Major	Significant, to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

In accordance with the DMRB Noise and Vibration Guidance, construction noise and construction traffic noise effects shall constitute a significant effect where it is determined that a major or moderate magnitude of effect will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights,
- A total number of days exceeding 40 in any six consecutive months
-

Construction Vehicular Traffic

In order to assist with interpretation of construction traffic noise, Table 9.3 includes guidance as to the likely magnitude of impact associated with changes in traffic noise levels along an existing road. This guidance is taken from Table 3.17 of *DMRB: Noise and Vibration* (UKHA 2020). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB document.

Table 9.3: Likely Effect Associated with Change in Traffic Noise Level – Construction.

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Short-term)	EPA Significance of Effect
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant to Slight
3 – 4.9	Perceptible	Moderate	Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

The DMRB guidance outlined above will be used to assess the predicted increases in traffic levels on public roads associated with the proposed development and comment on the likely impacts during the construction stage.

9.2.1.2 Criteria for Assessing Construction Vibration Impacts

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For the purpose of the proposed development, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

Peak Particle Velocity (PPV)

PPV is commonly used to assess the structural response of buildings to vibration. Reference to the following documents has been made for the purposes of this assessment in order to discuss appropriate PPV limit values:

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS 5228: 2009 +A1 2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (BS5228-2).

BS7385 and BS5228-2:2009+A1:2014 advise that, for soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table B.2 of BS5228-2:2009+A1:2014 might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges.

The documents note that minor structural damage can occur at vibration magnitudes that are greater than twice those presented in Table 9.4. Major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in the table. It should be noted that these values refer to the vibration at base of the building. Table 9.4 sets out the limits as they apply to vibration frequencies below 4 Hz, where the most conservative limits are required. At higher frequencies, the limit values for transient vibration within Table B.2 of BS5228-2:2009+A1:2014 will apply, with similar reductions applied for continuous vibration and those for protected structures.

Table 9.4: Recommended construction vibration thresholds for buildings

Structure Type	Allowable vibration (in terms of PPV) at closest part of sensitive property to source of vibration, at frequency of ≤ 4 Hz	
	Transient vibration	Continuous vibration
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s	25 mm/s
Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s
Protected and Historic Buildings	6 – 15 mm/s	3 – 7.5 mm/s
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3 mm/s	

As per BS5228-2:2009+A1:2014, below a frequency of 4 Hz where a high displacement is associated with a relatively low component PPV, a maximum displacement of 0.6 mm (zero to peak) should be used.

Human Perception

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Higher levels of vibration, however, are typically tolerated for single events or events of short duration. For example, during piling, one of the primary sources of vibration during construction, vibration levels may typically be tolerated at up to 2.5mm/s. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant to such activities during the night-time (or if they are trying to sleep during the daytime).

BS 5228-2 also provides a useful guide relating to the assessment of human response to vibration in terms of the peak particle velocity (PPV). Table 9.5 below summarises the range of vibration values and the associated potential effects on humans.

Table 9.5: Guidance on effects of human response to PPV magnitudes

Vibration Level, mm/s PPV	Description of Effect	Possible Significance Rating
≥10	Vibration is likely to be intolerable for any more than a brief exposure to a level of 10 mm/s	Very Significant
≥1 to <10	Increasing likelihood of complaints in residential environments but can be tolerated at the lower end of the scale if prior warning and explanation has been given to residents	Significant to Very Significant
≥0.3 to <1	Increasing likelihood of perceptible vibration in residential environments	Slight to Moderate
<0.3	Vibration is unlikely to be perceptible in even the most sensitive situations for most vibration frequencies associated with construction	Not significant

Further consideration of where the effect is significant is undertaken using professional judgment based on duration and frequency of the effect, as well as the time of the day.

9.2.2 OPERATIONAL PHASE

9.2.2.1 Criteria for Assessing Operational Noise Impacts

The main potential source of outward noise from the proposed development will relate to traffic flows to and from the development site onto the public roads. There will also be a variety of electrical and mechanical plant required to service the development. The relevant guidance documents used to assess potential operational noise and vibration impacts are summarised in the following sections.

Change in Traffic Noise Levels

In the absence of any Irish guidelines or standards describing the effects associated with changes in road traffic noise levels, reference has been made to the DMRB Noise and Vibration (UKHE 2020). This document provides magnitude rating tables relating to changes in road traffic noise. The document suggests that, during the year of opening, the magnitude of impacts between the Do Minimum and the Do Something scenarios are likely to be greater compared to the longer-term period (fifteen years post-opening), when people become more habituated to the noise level change. It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10 dB would be described as a doubling of loudness. In summary, the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Table 9.6: Likely impact associated with short-term change in traffic noise level (DMRB 2020)

Change in Noise Level (dB LA10)	Short to medium-term magnitude	EPA Classification of Impact
<1.0	Negligible	Imperceptible
1.0 to 2.9	Minor	Not Significant
3 – 4.9	Moderate	Slight, Moderate
>5.0	Major	Significant

Table 9.7: Likely impact associated with long-term change in traffic noise level (DMRB 2020)

Change in Noise Level(dB LA10)	Subjective Reaction	Long-Term Term Magnitude	EPA Classification of Impact
< 3.0	Barely Perceptible	Negligible	Not Significant
3 – 4.9	Perceptible	Minor	Slight, Moderate
5 – 9.9	Up to a doubling of loudness	Moderate	Significant
10+	More than a doubling of loudness	Major	–Very Significant

The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3 dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10 dB(A) change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

Plant Noise

Once a development of this nature becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Some of this plant may operate 24 hours a day and hence would be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties would potentially have the greatest effect. Plant contained within plant rooms has the least potential for impact, once consideration is given to appropriate design of the space.

The following wording would be considered typically suitable for a planning condition related to operational noise (plant) associated with a development of this nature:

“Noise levels from the Proposed Development should not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public space. In particular the rated noise levels from the Proposed Development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial area.

Reason: In order to ensure a satisfactory standard of development, in the interests of residential amenity.”

The typical planning condition outlined above related to noise emissions from mechanical plant items makes reference to the British Standard BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound. This document is the industry standard method for analysing building services plant noise emissions to residential NSLs and is the document commonly used by Local Authorities in planning conditions and also in complaint investigations.

BS 4142 (2014+A1:2019) describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess

the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 (2014+A1:2019) assessment, it is necessary to compare the measured external background noise level (i.e. the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2 dB penalty for a tone which is just perceptible at the NSL, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

“ambient noise level, $L_{Aeq,T}$ ” is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“residual noise level, $L_{Aeq,T}$ ” is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“specific noise level, $L_{Aeq,T}$ ” is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“rating level, $L_{Ar,T}$ ” is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);

“background noise level, $L_{A90,T}$ ” is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.

If the rated plant noise level is +10 dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse effect. A difference of around +5 dB is likely to be an indication of an adverse effect, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse effect or a significant adverse effect. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low effect.

It is important to note that cumulative plant noise levels from the proposed development site must be designed to meet the relevant noise criteria set at a given sensitive receptor location.

Internal Noise at Receivers within the Development

To ensure there is no adverse impact on the future inhabitants of the proposed development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set out in Table 9.8 and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

Table 9.8: Professional practice guidance on planning and noise (ProPG) internal noise levels (BS 8233:2014)

Activity	Location	Day (07:00 to 23:00hrs) dB LAeq,16hr	Night (23:00 to 07:00hrs) dB LAeq,8hr
Resting	Living room	35 dB LAeq,16hr	-
Dining	Dining room/ area	40 dB LAeq,16hr	-
Sleeping	Bedroom	35 dB LAeq,16hr	30 dB LAeq,8hr 45 dB L _{Amax,T} Note A

Note A: The document comments that the internal L_{AFmax,T} noise level may be exceeded no more than 10 times per night without a significant impact occurring.

For the purposes of this study, it is appropriate to derive external assessment criteria based on the internal criteria noted in the Table above. This is done by factoring in the degree of noise reduction afforded by a partially open window. This is nominally deemed to be 15 dB.

Based on the guidance outlined in the BS8233 standard, the following external noise levels from the operation of the development itself would be considered reasonable in order to achieve suitable internal noise levels within the nearest residential properties:

- Daytime (07:00 to 23:00 hrs): 55 dB LAeq,16hrs day
- Night-time (23:00 to 07:00 hrs): 45 dB LAeq,8hrs night

Residential Inward Noise Impact Assessment

The *Professional Practice Guidance on Planning & Noise* (ProPG) (2017) is the most commonly used guidance document for assessment of the inward noise impacts within new residential developments.

The ProPG outlines a systematic risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows: -

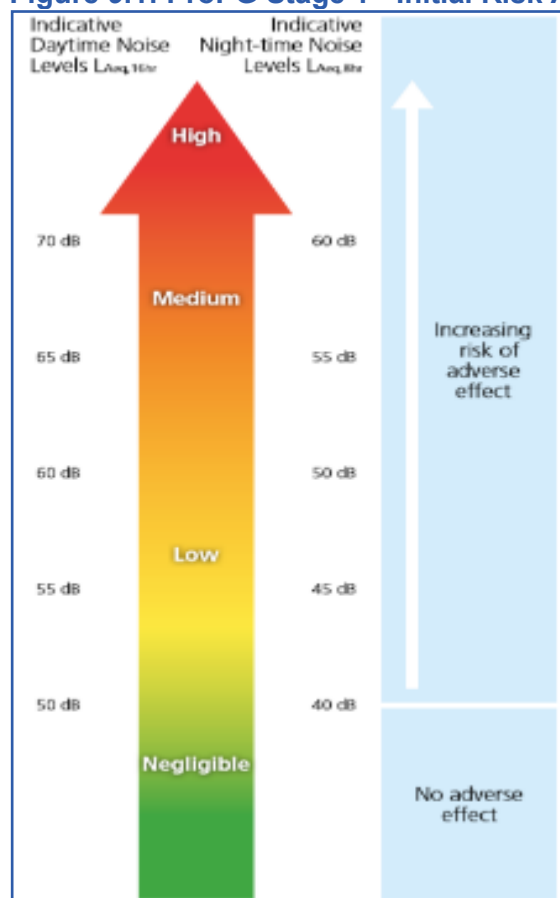
- **Stage 1:** Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.
- **Stage 2:** Involves a full detailed appraisal of the Proposed Development covering four “key elements” that include: -
 - Element 1 – Good Acoustic Design Process
 - Element 2 – Noise Level Guidelines
 - Element 3 – External Amenity Area Noise Assessment
 - Element 4 – Other Relevant Issues

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk, based on the pre-existing noise environment. Figure 9.1 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and / or predicted on site.

It should be noted that a site should not be considered a negligible risk if more than 10 no. L_{AFMax} events exceed 60 dB during the night period, and the site should be considered a high risk if the L_{AFMax} events exceed 80 dB more than 20 times a night.

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings. The recommended indoor ambient noise levels are set out in Table 9.8 above and are based on annual average data.

Figure 9.1: ProPG Stage 1 - Initial Risk Assessment



In addition to these absolute internal noise levels, ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed, and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

9.2.2.2 Criteria for Assessing Operational Vibration Impacts

There are no noteworthy sources of vibration associated with the operational stage; therefore, vibration criteria have not been specified.

9.2.3 DUBLIN AGGLOMERATION NOISE ACTION PLAN 2024 – 2028

The Dublin Agglomeration Noise Action Plan 2024 – 2028, addresses the requirements of the European Noise Directive 2002/49/EC for local authorities for managing environmental noise. The Noise Action Plan (NAP) states the following regarding planning guidance: “*The appropriate use of the planning system can*

be used to help avoid, or minimise, the adverse impacts of noise without placing unreasonable restrictions on development”.

The action plan outlines guidance to minimise the impact in relation to noise on new developments. ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise, and BS 8233: Guidance on Sound Insulation and Noise Reduction for Buildings, are recommended as guidance to be employed in areas where people are being brought to noise in the form of existing road and rail noise.

9.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

9.3.1 SITE AREA DESCRIPTION

The proposed development currently comprises of greenfield lands. A full description of the development is provided in Chapter 2: Description of the Proposed Development. The site is to be located in the western part of the town of Balbriggan, County Dublin.

9.3.2 RECEPTORS

The site is bordered by a series of individual houses to the north on Flemington Lane, numerous residential estates to the east and southeast and agricultural lands to the southwest and west.

9.3.3 ENVIRONMENTAL NOISE SURVEY

An environmental noise survey has been conducted to quantify noise emissions across the existing site. The external survey was conducted in general accordance with ISO1996-2:2017 *Acoustics - Description, Measurement and Assessment of Environmental Noise -- Determination of Environmental Noise Levels*. Specific details are set out in the following sections.

9.3.4 CHOICE OF MEASUREMENT POSITIONS

An environmental noise survey was carried out at the site by AWN Consulting between 17 October and 21 October 2025 to assess the existing noise environment. Measurement locations were selected as shown in Figure 9.2. These locations were chosen to representatively characterise the baseline noise conditions in the surrounding area.

Three attended monitoring locations, designated AN1 to AN3, were selected:

- **AN1** was positioned to capture the baseline noise environment of the adjacent residential area, Flemington Park.
- **AN2** was located to assess the baseline noise levels near the residential estates of Hastings Lawn and Bremore Pastures Park.
- **AN3** was situated to monitor noise levels near the residential estates of Tayler Hill Gardens and Folkstown Park Avenue.

In addition, one unattended monitoring location, **UN1**, was installed on the development site itself, overlooking Clonard Road (Local Road) —the primary noise source in the area. The purpose of UN1 was to measure the noise levels directly affecting the proposed development.

Figure 9.2: Noise Survey Locations

9.3.5 SURVEY PERIOD

The attended noise survey was conducted between the following periods:

- AN1 to AN3 between 09:47 hrs to 13:16 hrs on 17 October 2025.
-

The unattended noise survey was conducted between the following periods:

- UN1 between 14:30 hrs on 17 October to 14:30 hrs on 21 October 2025.
-

The measurements cover a period that was selected to provide a typical snapshot of the existing noise climate, with the primary purpose being to ensure that the proposed noise criteria associated with the development are commensurate with the prevailing environment.

9.3.6 INSTRUMENTATION

The measurements were performed using the equipment listed in Table 9.9 below.

Table 9.9: Noise Monitoring Equipment Details

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Sound Level Meter	Larson Davis	LxTI	0006122	30/06/2025
Calibrator	Brüel & Kjær	Type 4231	2205805	28/11/2024

The microphone was protected using a proprietary windshield. The sound level meter was checked calibrated using a Brüel & Kjær Type 4231 Sound Level before and after the survey. Calibration certificates available on request.

9.3.7 MEASUREMENT PARAMETERS

The noise survey results are presented in terms of the following parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The 'A' suffix denotes the fact that the sound levels have been 'A-weighted' in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

9.3.8 PROCEDURE

The unattended monitoring equipment was configured to log data over 15-minute periods, saved to the instrument memory for subsequent analysis. Survey personnel noted all primary noise sources contributing to noise build-up when the instrumentation was being set up and collected.

The attended noise monitoring equipment was configured to measure data over a 15-minute period at each location. Three measurements were taken at each location.

9.3.9 RESULTS

The weather during the survey periods was generally dry and calm and was not considered to have had a detrimental effect on the noise measurements.

9.3.9.1 Unattended Survey Results UN1

Table 9.10 summarises the measured day, evening and night-time noise levels for the entire survey period.

Table 9.10: Summary of Measured Noise Levels (dB re. 2×10^{-5} Pa) at UN1

Date	Sound Pressure Level (dB re. 2×10^{-5} Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (23:00 to 07:00 hrs)	
	L _{Aeq}	L _{A90}	L _{Aeq}	L _{A90}	L _{Aeq}	L _{A90}
Friday 17 October 2025	61	50	57	48	51	44
Saturday 18 October 2025	61	54	62	54	62	53
Sunday 19 October 2025	61	54	57	53	53	45
Monday 20 October	60	50	57	51	55	48
Tuesday 21 October 2025	61	55	-	-	-	-
Average	61 ¹	50 ²	59 ¹	51 ²	57 ¹	47 ²

Note 1: Logarithmically averaged

Note 2: Arithmetically averaged

Daytime noise levels were found to range between 60 to 61 dB L_{Aeq,12hour}, evening noise levels were in the range between 57 to 62 dB L_{Aeq,4hour}, while night-time noise levels were in the range of 51 to 62 dB L_{Aeq,8hour}.

Dominant noise sources noted during the survey were road traffic on the Clonard road with distant construction activity clearly audible from nearby construction site to the west and south west. Distant road traffic was also barely audible during Clonard road traffic and construction lulls.

Saturday, 18th October recorded higher evening and nighttime noise levels compared to the other survey days.

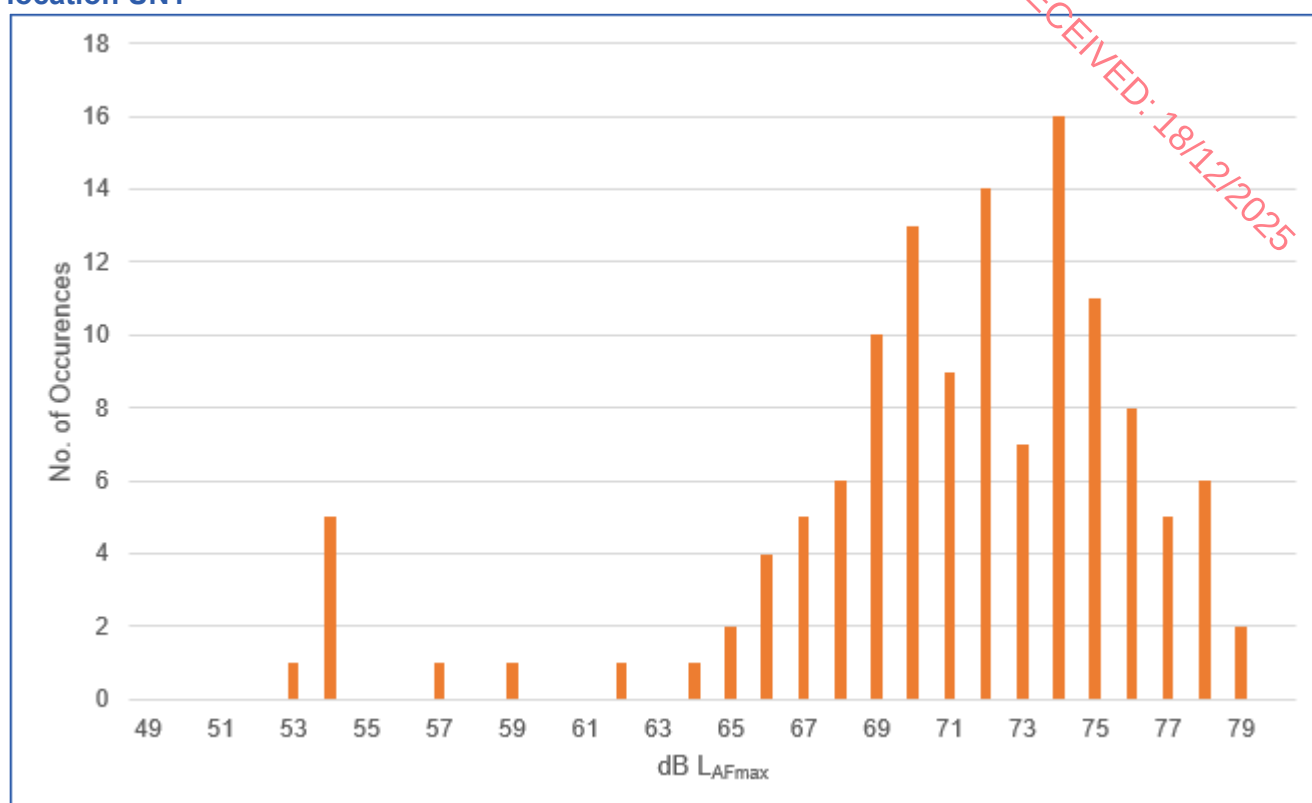
During the evening period on the 18th, the L_{Aeq} was 62 dB, compared to an average of 59 dB, and the L_{A90} was 54 dB, compared to the average of 51 dB.

During the nighttime period, the L_{Aeq} on the 18th was 62 dB, compared to the average of 57 dB, and the L_{A90} was 53 dB, compared to the average of 47 dB.

After reviewing the collected data, there was isolated period of elevated noise that could have skewed the results over a short time frame. A review of weather data for the day indicated that it began to rain and there were elevated wind speeds during the evening and nighttime periods, with over 1 mm of rainfall occurring between the survey intervals, which may have caused the elevated results. This weather affected data has been omitted from the chapters assessment and appropriate data was used to complete the assessments in this chapter.

The L_{AFmax} values were measured at 15-minute intervals over the duration of the unattended monitoring survey. Figure 9.3 presents the distribution of the magnitude of L_{AFmax} events during the night period.

Figure 9.3: Number of L_{AFmax} events at each decibel level measured during the night period at location UN1



120 events measured above 60 dB L_{AFmax} . No events were measured at or above 80dB L_{AFmax} . The most commonly occurring L_{AFmax} values are between 69 and 75 dB L_{AFmax} .

9.3.9.2 Survey Position AN1

The survey results for Location AN1 are presented in Table 9.11. During the survey, distant road traffic noise and birdsong was the dominant noise sources at this location. Distant construction noises, distant road traffic noise, dog barks and occasional helicopter fly byes were also audible at this measurement position.

Table 9.11: Measured noise levels at Location AN1

Date	Measurement Period	Measured Noise Levels, dB re 2x10-5 Pa		
		L_{Aeq}	L_{AFmax}	L_{AF90}
17 October 2025	09:47 - 10:02	49	68	36
	10:59 – 11:14	44	66	34
	12:27 – 12:42	49	69	37

Daytime noise levels were in the range of 44 to 49 dB $L_{Aeq,15min}$ and in the range of 36 to 37 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

9.3.9.3 Survey Position AN2

The survey results for Location AN2 are presented in Table 9.12. During the survey, the dominant noise sources at this location were distant road traffic and construction activities. Additional audible sounds included landscaping equipment, dog barking, and pedestrian footfall. The measurement taken at 11:41 recorded elevated noise levels, attributed to landscaping work in a nearby residential estate.

Table 9.12: Measured noise levels at Location AN2

Date	Measurement Period	Measured Noise Levels, dB re 2x10 ⁻⁵ Pa		
		L _{Aeq}	L _{AFMax}	L _{AF90}
17 October 2025	10:10 - 10:25	47	65	37
	11:41 – 11:56	53	70	40
	12:51 – 13:06	44	63	39

Daytime noise levels were in the range of 44 to 53 dB L_{Aeq,15min} and in the range of 37 to 40 dB L_{A90,15min} during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

9.3.9.4 Survey Position AN3

The survey results for Location AN3 are presented in Table 9.13. During the survey, the dominant noise sources at this location were nearby construction activities including HGV passing the monitoring location. Additional audible sounds included dog barking and distant road traffic noise. The measurement taken at 12:03 recorded elevated noise levels, attributed to a HGV parking and letting his engine run idle for approximately 5 minutes of the measurement.

Table 9.13: Measured noise levels at Location AN3

Date	Measurement Period	Measured Noise Levels, dB re 2x10 ⁻⁵ Pa		
		L _{Aeq}	L _{AFMax}	L _{AF90}
17 October 2025	10:35 – 10:50	68	89	48
	12:03 – 12:18	68	92	57
	13:11 – 13:26	63	82	43

Daytime noise levels were in the range of 63 to 68 dB L_{Aeq,15min} and in the range of 43 to 57 dB L_{A90,15min} during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

9.3.9.5 Vibration

No significant level of vibration was noted at any location during site attendance.

9.4 DO NOTHING SCENARIO

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged resulting in a neutral and local impact in the long-term.

Moreover, if the current proposal were not developed, then it is likely that one similar in nature would be proposed, in line with the national policy of promoting compact growth on brownfield sites and the sites zoning designations that support development of the site for residential and mixed uses.

9.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

In summary, the development will consist of the construction of 815 no. dwellings, C-Ring Road between Flemington Lane and the Clonard Road roundabout, open space, community/retail floorspace and 2 no. creches on an overall site area of 24.91 hectares comprising 610 no. houses, 194 apartments & 11 no.

later living dwellings. The development will also include 2 no. crèches (c. 1,060 sq. m), Commercial/retail floorspace (419 sq. m), along with 2 storey community pavilion (730 sq. m), Class 1 open space in the western portion of the development (2.39 hectares) as well as a series of public open spaces throughout the site comprising 2.87 ha (c. 16.4% of the net site area of 17.30 hectares).

A description of the proposed development/project is contained in chapter 2 of the EIAR. The following provides a description of the main characteristics of the project as they relating to noise and vibration during the demolition, construction and operational phases.

9.5.1 CONSTRUCTION PHASE

During the construction phase, a variety of items of plant will be in use for the purposes of demolition, site clearance and construction. The type and number of equipment will vary between the varying construction phases and depending on the phasing of the works. There will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise.

9.5.2 OPERATIONAL PHASE

During the operational phase, the potential sources of noise are those associated with additional vehicular traffic on public roads, operational plant and building services, and vehicular movements.

Noise and vibration emissions from the proposed development will vary both in terms of duration and magnitude. The following sections analyse the expected construction and operational phase noise and vibration impacts, both in terms of the proposed assessment criteria and the expected impacts in terms of the significance of effects.

9.6 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

9.6.1 CONSTRUCTION PHASE

A variety of items of plant will be in use for the purpose of site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

The proposed general construction hours are 07:00 to 19:00 hrs, Monday to Friday and 07:00 to 14:00 hrs on Saturdays. No working will be allowed on Sundays and Public Holidays. Subject to the agreement of the local authority, out of hours working may be required for watermain connections, foul drainage connections etc.

The construction phase will be controlled using construction noise threshold values which the contractor will be required to work within as much as is practicable. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed.

9.6.1.1 Sensitive Receptors

Noise and vibration impacts have been assessed to the nearest sensitive locations to the site boundaries, i.e. a worst-case assessment of the closest sensitive locations during any of the construction stages. These closest locations are identified in Figure 9.4 and described below.

Figure 9.4: Indicating closest noise sensitive locations

- **NSL1:** Cluster of residential houses along Flemington Lane, approx. 40 m to the north of the northern site boundary and approximately 40 m from the closest construction activities.
-
- **NSL2:** Cluster of residential houses along Flemington Lane, approx. 75 m to the north of the northern site boundary and approximately 75 m from the closest construction activities.
-
- **NSL3:** Flemington Park residential development approx. 10 m to the north and northeast of the eastern site boundary and approximately 25 m from the closest construction activities.
-
- **NSL4:** The Hastings residential development approx. 10 m to the east of the eastern site boundary and approximately 25 m from the closest construction activities.
-
- **NSL5:** Bremore Pastures residential development approx. 10 m to the east of the eastern site boundary and approximately 25 m from the closest construction activities.
-
- **NSL6:** Taylor Hills residential development approx. 5 m to the east of the eastern site boundary and approximately 10 m from the closet construction activities.
-
- **NSL7:** Folkstown Park Ave residential development approx. 15 m to the east and southeast of the eastern site boundary and approximately 30 m from the closet construction activity.

The construction stage will be undertaken over a number of phases from site preparation through to building construction and internal fit out. In terms of the potential noise and vibration impacts, the key stages and activities are expected to involve:

- Site clearance and demolition of existing structures;
- Ground works (excavation and piling);
- Superstructure Construction; and
- Internal fit out.
-

The construction programme will create typical construction activity related noise onsite. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in British Standard Institute (BSI) *BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise* (BSI, 2014). This standard sets out sound power / sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels.

The following section discusses typical noise levels associated with the proposed development demolition/construction phase and comments on potential noise impacts at distances to the nearest Noise Sensitive Locations (NSLs) during the key stages and types of activities that will occur on site.

9.6.1.2 Demolition Works

The existing buildings and associated structures within the site will be demolished. There will be periods when breakers will be required to break out foundations and solid structures. For this specific activity a total construction noise level of 92 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations.

9.6.1.3 Excavation and Piling

For construction works associated with activities such as excavation and structural works including excavators, loaders, dozers, cranes, generators, concreting works and continuous flight augured piling etc. noise levels are typically in the range of 70 to 82 dB L_{Aeq} at 10m.

9.6.1.4 Construction of Proposed Structure

For construction work areas with lower noise levels such as those associated with superstructure works including site compounds (for storage, offices and material handling, generators etc.), smaller items of mobile plant (excavators, cranes, dozers), landscaping and concreting works with lower noise emissions, a total construction noise level of 80 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations. This would include, for example two items of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area.

9.6.1.5 Indicative Construction Noise Levels

Indicative noise calculations have been undertaken which assume that plant items are operating for 66% of the time. Screening from a standard site hoarding of 2.4m is assumed around all site boundaries. It must be stated that for most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations and the "on-time" of plant and equipment will be less than those assumed over a normal working day (i.e. the use of piling rigs or breakers for demolition will be in use for shorter periods than those assumed over a normal working day) and consequently will have lower noise levels. The assessment presented is therefore representative of a best estimate conservative scenario representing construction activities. Table 9.14 presents the calculated noise levels at varying distances.

Table 9.14: Calculated Construction Noise Levels at Varying Distances

Activity	Predicted Construction Noise Level $L_{Aeq}(1\text{hour})$ (dB)					
	10m	20m	30m	40m	50m	100m
Demolition works	85	79	75	73	71	65
Excavations and Piling Works	75	69	65	63	61	56
General Site Work including Superstructure and Fit out	73	67	63	61	59	53

Reference to the construction noise levels in Table 9.14 indicate that the CNT of 65 dB $L_{Aeq,T}$ will be exceeded at the closest NSLs when activities are occurring along the closest site boundaries. However, a range of noise levels will occur as works take place across the site.

During the demolition phase, which comprise the demolition of a single storey house and an agricultural shed, in a small part of the project site at Flemington Lane, the CNT is likely to be briefly exceeded at NSLs 1 and 2, situated to the north of the site. NSL 1 is approximately 40 meters from the demolition works, while NSL 2 is approximately 80 meters away. However, it's noted that the exceedance will likely be brief. Reference to the temporal criteria outlined in Section 9.2.1 indicates that although the noise threshold will likely be exceeded at NSLs 1 and 2, the overall effect is determined to be **negative, slight to moderate and brief**. At all other identified NSLs, noise levels will remain below the CNT. Having regard to the nature of the demolition works relating to the demolition of a house and dismantling of an agricultural shed, it should be noted that this will be the shortest phase of works, anticipated to be less than a week, and the use of breakers will only occur for a portion of this phase.

The distance between NSL 7 and the piling works is approximately 30 meters, which would produce a noise level that is below the CNT and results in a **negative, slight to moderate and temporary** impact. All other NSLs are located more than 30 meters from the piling activity and therefore will not exceed the CNT

During general site construction works, which involve building structures, lower noise levels will typically be generated. There is potential for the CNT to be exceeded by a small margin at distances of 20 meters or less, particularly when works occur along immediate site boundaries. When activities take place at 25 meters or more from NSLs, noise levels are expected to remain within the CNT. NSL 6 is the only location where the approximate distance to construction activity falls within 20 meters, meaning the CNT is likely to be exceeded. This would result in a **negative, moderate to significant and temporary** impact assessed. For all other NSLs, the CNT is not predicted to be exceeded during this phase.

Noise mitigation measures will therefore be required on site to reduce construction noise levels along these boundaries to reduce any potential significant effects. Recommended mitigation measures are presented in Section 9.8.

9.6.1.6 Construction Vibration

During rock breaking, there is potential for vibration to be generated through the ground. Empirical data for this activity is not provided in the BS 5228-2:2009+A1:2014 (BSI 2014b) standard, however the likely level of vibration from this activity is expected to be significantly below the vibration criteria for building damage on experience from other sites. AWN Consulting Ltd have previously conducted vibration

measurements under controlled conditions, during trial construction works, where breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator; and
- 6 tonne hydraulic breaker on large Liebherr tracked excavator.

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 PPV (mm/s) to 0.25 PPV (mm/s) at distances of 10m to 50m respectively from the breaking activities. Using a 6 Tonne Breaker, measured vibration levels ranged between 1.4 PPV (mm/s) to 0.24 PPV (mm/s) at distances of 10m to 50m respectively.

Whilst these measurements relate to a breaking of concrete, the range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity. The vibration levels experienced at surrounding receptors will be well below the criteria of cosmetic building damage, however, it will likely be perceptible when work is taking place at the closest locations to the receptors. Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in table 9.5.

There is potential for piling to be used for building and basement foundations for apartment buildings. For the purposes of this assessment, the expected vibration levels during piling, assuming augured or bored piles, have been determined through reference to published empirical data. The British Standard BS 5228 – *Part 2: Vibration*, publishes the measured magnitude of vibration of rotary bored piling using a 600 mm pile diameter for bored piling into soft ground over rock:

- 0.54 mm/s at a distance of 5 m, for auguring;
- 0.22 mm/s at a distance of 5 m, for twisting in casing;
- 0.42 mm/s at a distance of 5 m, for spinning off; and
- 0.43 mm/s at a distance of 5 m, for boring with rock auger.
-

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 9.4 and therefore will avoid any cosmetic damage to buildings. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in Table 9.5. The predicted vibration impact during the construction phase is **negative, not significant and short-term**.

9.6.1.7 Construction Traffic

During the construction phase, traffic associated with the proposed development would consist of a mix of Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) travelling to and from the site.

It is noted that in order to increase traffic noise levels by 1 dB, traffic volumes would need to increase by the order of 25%. It is forecast that additional traffic introduced onto the local road network due to the construction stage of the development will not introduce a level of traffic that would result in a volume change in excess of 25% on the surrounding road network and the expected impact is therefore **negative, not significant and short-term**.

9.6.2 OPERATIONAL PHASE

Once the proposed development is operational, the potential noise impacts to the surrounding environment are predicted to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.).

The main potential noise impact associated with the proposed development is considered, therefore, to relate to the generation of additional traffic to and from the site as a result of the new residential buildings. Potential noise impacts also relate to operational plant serving the apartment buildings, where relevant. Once operational, there are no noteworthy sources of vibration associated with the development site.

Due consideration must be given to the nature of the primary noise sources when setting criteria. Potential noise impacts during the operational phase include the following:

- Additional vehicular traffic on surrounding roads;
- Building services plant;
- Crèche playground area;

9.6.2.1 Additional Vehicular Traffic on Surrounding Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the proposed development, given that traffic from the development will make use of the existing road network.

A traffic impact assessment relating to the proposed development has been prepared by the Traffic Insights as part of this EIAR (refer to Chapter 11 – Traffic & Transportation). The results of this assessment in terms of overall Annual Average Daily Traffic (AADT) and the percentage of HGVs have been reviewed to predict any impact of the proposed development on traffic flows in the area. The calculated change in noise levels during Opening Year (2027) and Future Design Years (2032) and (2042) are summarised in Table 9.15, Table 9.16 and Table 9.17.

Table 9.15: Summary of change in noise level (Opening Year 2027)

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
J1	Arm A - R122(NNE)	15,739	2%	15,631	2%	0.0
	Arm B - L1360	6,389	6%	6,434	6%	0.0
	Arm C - R122 (SSW)	17,712	3%	21,176	3%	0.8
	Arm D - C Ring Road	-	-	5,730	2%	-
J2	Arm A - R122(NNE)	14,160	1%	10,990	1%	-1.1
	Arm B - Naul Road	336	4%	246	5%	-1.3
	Arm C - R122 (SSW)	15,711	1%	11,193	1%	-1.5
	Arm D - L1130	3,374	4%	0		-
J3	Arm A - R122(NE)	13,064	2%	13,864	2%	0.3

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
	Arm B - R122 (SE)	14,161	2%	11,958	2%	-0.7
	Arm C - Boulevard Rd	6,043	1%	4,641	2%	-1.1
J4	Arm A - R122(NE)	8,461	2%	8,948	2%	0.2
	Arm B - Retail Park	5,944	2%	5,944	2%	0.0
	Arm C - R122 (SW)	13,025	2%	13,421	2%	0.1
	Arm D - Castlemill Link Road	9,151	2%	9,243	2%	0.0
J5	Arm A - R122(NE)	9,235	2%	9,594	2%	0.2
	Arm B - Millfield	5,367	2%	5,449	2%	0.1
	Arm C - R122 (SW)	8,405	2%	8,868	2%	0.2
	Arm D - Westbrook Park	1,072	2%	1,095	2%	0.1
J6	Arm A - R122(E)	5,507	1%	5,687	1%	0.1
	Arm B - Harry Reynolds Road (S)	4,476	3%	4,511	3%	0.0
	Arm C - R122 (W)	9,242	2%	9,601	2%	0.2
	Arm D - Harry Reynolds Road (N)	7,858	2%	8,002	2%	0.1
J7	Arm A - R132 (SE)	11,075	3%	11,252	3%	0.1
	Arm B - R122 Chapel Street	4,677	2%	4,856	1%	0.2
	Arm C - R132 (NW)	10,986	3%	11,120	3%	0.1
J8	Arm A - R122(NNE)	10,661	3%	10,747	3%	0.0
	Arm B - Harry Reynolds Road	5,348	3%	5,391	3%	0.0
	Arm C - R122 (SSW)	9,989	3%	10,077	3%	0.0
J9	Arm A - Cardy Rock Crescent	1,651	2%	1,669	2%	0.0

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
	Arm B - R132 (SE)	9,925	3%	10,028	3%	0.0
	Arm C - Hamlet Lane	3,873	2%	4,041	2%	0.2
	Arm D - R132 (NW)	7,697	4%	7,743	4%	0.0
J10	Arm A - R132 (SE)	7,769	4%	7,866	3%	0.1
	Arm B - Bremore Cottages	2,029	1%	2,097	1%	0.1
	Arm C - R132 (NW)	6,272	4%	6,318	4%	0.0
J11	Arm A - Flemington Lane North (L1130)	3,310	2%	3,343	2%	0.0
	Arm B - Flemington Lane	1,739	1%	1,807	1%	0.2
	Arm C - Flemington Lane South (L1130)	3,364	2%	3,399	2%	0.0
J12	Arm A - Trimleston	390	1%	392	1%	0.0
	Arm B - The Rise	5,430	2%	5,597	2%	0.1
	Arm C - Barons Hall Rise	4,627	3%	4,737	3%	0.1
	Arm D - Hamlet Lane	4,090	3%	4,369	3%	0.3
J13	Arm A - The Park	6,718	3%	6,830	2%	0.1
	Arm B - Moylaragh Road	2,741	2%	2,757	2%	0.0
	Arm C - Castlemill Road	7,511	2%	7,607	2%	0.1
J14	Arm A - Hampton Gardens Drive	710	2%	710	2%	0.0
	Arm B - Castlemill Link road (SSE)	9,177	2%	9,269	2%	0.0
	Arm C - Taylor Hill Walk	608	1%	608	1%	0.0

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
	Arm D - Castlemill Link Road (NW)	8,418	2%	8,510	2%	0.0
J15.1	Arm A - R122 (E)	18,901	3%	19,382	3%	0.1
	Arm B - M1 On Slip	6,035	4%	6,170	4%	0.1
	Arm C - R122 (W)	12,882	4%	13,176	4%	0.1
	Arm D - M1 Off Slip	2,462	6%	2,514	6%	0.1
J15.2	Arm A - R122 (ENE)	12,864	4%	13,158	4%	0.1
	Arm B - M1 Off Slip	6,328	4%	6,457	3%	0.1
	Arm C - R122 (WSW)	6,566	5%	6,676	5%	0.1
	Arm D - M1 On Slip	2,657	5%	2,712	5%	0.1

Table 9.16: Summary of change in noise level (Future Design Year 2032)

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
J1	Arm A - R122(NNE)	16,681	2%	16,647	2%	0.0
	Arm B - L1360	6,829	7%	6,874	7%	0.0
	Arm C - R122 (SSW)	18,818	3%	22,445	3%	0.8
	Arm D - C Ring Road	-	-	5,968	2%	-
J2	Arm A - R122(NNE)	14,981	1%	11,743	1%	-1.1
	Arm B - Naul Road	359	4%	264	5%	-1.3
	Arm C - R122 (SSW)	16,642	1%	11,960	1%	-1.4
	Arm D - L1130	3,612	4%	0	-	-
J3	Arm A - R122(NE)	13,862	2%	14,663	2%	0.2
	Arm B - R122 (SE)	14,993	2%	12,790	3%	-0.7
	Arm C - Boulevard Rd	6,203	1%	4,801	2%	-1.1
J4	Arm A - R122(NE)	8,917	2%	9,404	2%	0.2
	Arm B - Retail Park	6,356	2%	6,356	2%	0.0

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
	Arm C - R122 (SW)	13,821	2%	14,217	2%	0.1
	Arm D - Castlemill Link Road	9,760	2%	9,852	2%	0.0
J5	Arm A - R122(NE)	9,780	2%	10,139	2%	0.2
	Arm B - Millfield	5,717	2%	5,799	2%	0.1
	Arm C - R122 (SW)	8,864	2%	9,327	2%	0.2
	Arm D - Westbrook Park	1,141	2%	1,163	2%	0.1
J6	Arm A - R122(E)	5,839	1%	6,018	1%	0.1
	Arm B - Harry Reynolds Road (S)	4,778	3%	4,814	3%	0.0
	Arm C - R122 (W)	9,787	2%	10,146	2%	0.2
	Arm D - Harry Reynolds Road (N)	8,365	2%	8,509	2%	0.1
J7	Arm A - R132 (SE)	11,813	3%	11,990	3%	0.1
	Arm B - R122 Chapel Street	4,951	2%	5,131	2%	0.2
	Arm C - R132 (NW)	11,729	3%	11,863	3%	0.0
J8	Arm A - R122(NNE)	11,387	4%	11,473	4%	0.0
	Arm B - Harry Reynolds Road	5,711	3%	5,754	3%	0.0
	Arm C - R122 (SSW)	10,666	3%	10,754	3%	0.0
J9	Arm A - Cardy Rock Crescent	1,760	2%	1,779	2%	0.0
	Arm B - R132 (SE)	10,594	3%	10,696	3%	0.0
	Arm C - Hamlet Lane	4,098	3%	4,265	3%	0.2
	Arm D - R132 (NW)	8,225	4%	8,272	4%	0.0
J10	Arm A - R132 (SE)	8,289	4%	8,386	4%	0.1

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
	Arm B - Bremore Cottages	2,150	1%	2,219	1%	0.1
	Arm C - R132 (NW)	6,703	5%	6,749	4%	0.0
J11	Arm A - Flemington Lane North (L1130)	3,532	3%	3,565	3%	0.0
	Arm B - Flemington Lane	1,840	1%	1,908	1%	0.2
	Arm C - Flemington Lane South (L1130)	3,588	2%	3,623	2%	0.0
J12	Arm A - Trimleston	417	1%	418	1%	0.0
	Arm B - The Rise	5,762	2%	5,930	2%	0.1
	Arm C - Barons Hall Rise	4,920	3%	5,029	3%	0.1
	Arm D - Hamlet Lane	4,302	3%	4,581	3%	0.3
J13	Arm A - The Park	7,157	3%	7,268	3%	0.1
	Arm B - Moylaragh Road	2,928	2%	2,944	2%	0.0
	Arm C - Castlemill Road	8,007	2%	8,102	2%	0.1
J14	Arm A - Hampton Gardens Drive	759	2%	759	2%	0.0
	Arm B - Castlemill Link road (SSE)	9,788	2%	9,879	2%	0.0
	Arm C - Taylor Hill Walk	649	1%	649	1%	0.0
	Arm D - Castlemill Link Road (NW)	8,976	2%	9,067	2%	0.0
J15.1	Arm A - R122 (E)	20,099	4%	20,580	4%	0.1
	Arm B - M1 On Slip	6,424	4%	6,558	4%	0.1
	Arm C - R122 (W)	13,709	4%	14,003	4%	0.1

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
	Arm D - M1 Off Slip	2,624	6%	2,677	6%	0.1
J15.2	Arm A - R122 (ENE)	13,690	4%	13,984	4%	0.1
	Arm B - M1 Off Slip	6,738	4%	6,867	4%	0.1
	Arm C - R122 (WSW)	7,003	5%	7,114	5%	0.1
	Arm D - M1 On Slip	2,832	5%	2,887	5%	0.1

Table 9.17: Summary of change in noise level (Future Design Year 2042)

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Change in noise level (all vehicles)
J1	Arm A - R122(NNE)	17,600	2%	17,638	3%	0.0
	Arm B - L1360	7,271	7%	7,315	7%	0.0
	Arm C - R122 (SSW)	19,904	3%	23,693	3%	0.8
	Arm D - C Ring Road	-	-	6,202	3%	-
J2	Arm A - R122(NNE)	15,774	1%	12,469	1%	-1.0
	Arm B - Naul Road	383	4%	281	6%	-1.3
	Arm C - R122 (SSW)	17,544	1%	12,701	1%	-1.4
	Arm D - L1130	3,847	4%	0	-	-
J3	Arm A - R122(NE)	14,641	2%	15,442	2%	0.2
	Arm B - R122 (SE)	15,806	2%	13,603	3%	-0.7
	Arm C - Boulevard Rd	6,361	2%	4,958	2%	-1.1
J4	Arm A - R122(NE)	9,363	2%	9,850	2%	0.2
	Arm B - Retail Park	6,757	2%	6,757	2%	0.0
	Arm C - R122 (SW)	14,597	2%	14,993	2%	0.1
	Arm D - Castlemill Link Road	10,353	2%	10,444	2%	0.0
J5	Arm A - R122(NE)	10,312	3%	10,671	2%	0.1
	Arm B - Millfield	6,057	2%	6,139	2%	0.1

	Arm C - R122 (SW)	9,313	2%	9,776	2%	0.2
	Arm D - Westbrook Park	1,207	2%	1,229	2%	0.1
J6	Arm A - R122(E)	6,160	1%	6,339	1%	0.1
	Arm B - Harry Reynolds Road (S)	5,074	3%	5,110	3%	0.0
	Arm C - R122 (W)	10,320	3%	10,679	2%	0.1
	Arm D - Harry Reynolds Road (N)	8,860	2%	9,004	2%	0.1
J7	Arm A - R132 (SE)	12,539	4%	12,715	4%	0.1
	Arm B - R122 Chapel Street	5,219	2%	5,398	2%	0.1
	Arm C - R132 (NW)	12,459	4%	12,593	4%	0.0
J8	Arm A - R122(NNE)	12,102	4%	12,187	4%	0.0
	Arm B - Harry Reynolds Road	6,067	4%	6,110	4%	0.0
	Arm C - R122 (SSW)	11,331	4%	11,419	4%	0.0
J9	Arm A - Cardy Rock Crescent	1,867	3%	1,886	3%	0.0
	Arm B - R132 (SE)	11,251	4%	11,354	4%	0.0
	Arm C - Hamlet Lane	4,318	3%	4,486	3%	0.2
	Arm D - R132 (NW)	8,746	4%	8,792	4%	0.0
J10	Arm A - R132 (SE)	8,801	4%	8,898	4%	0.0
	Arm B - Bremore Cottages	2,268	1%	2,336	1%	0.1
	Arm C - R132 (NW)	7,130	5%	7,176	5%	0.0
J11	Arm A - Flemington Lane North (L1130)	3,748	3%	3,781	3%	0.0
	Arm B - Flemington Lane	1,938	1%	2,006	1%	0.2
	Arm C - Flemington	3,807	3%	3,843	3%	0.0

	Lane South (L1130)					
J12	Arm A - Trimleston	442	1%	444	1%	0.0
	Arm B - The Rise	6,087	3%	6,255	3%	0.1
	Arm C - Barons Hall Rise	5,208	3%	5,317	3%	0.1
	Arm D - Hamlet Lane	4,511	4%	4,790	4%	0.3
J13	Arm A - The Park	7,586	3%	7,698	3%	0.1
	Arm B - Moylaragh Road	3,110	3%	3,125	3%	0.0
	Arm C - Castlemill Road	8,490	2%	8,585	2%	0.0
J14	Arm A - Hampton Gardens Drive	807	2%	807	2%	0.0
	Arm B - Castlemill Link road (SSE)	10,382	2%	10,473	2%	0.0
	Arm C - Taylor Hill Walk	690	1%	690	1%	0.0
	Arm D - Castlemill Link Road (NW)	9,519	2%	9,610	2%	0.0
J15.1	Arm A - R122 (E)	21,280	4%	21,761	4%	0.1
	Arm B - M1 On Slip	6,807	4%	6,942	4%	0.1
	Arm C - R122 (W)	14,527	4%	14,821	4%	0.1
	Arm D - M1 Off Slip	2,787	7%	2,840	7%	0.1
J15.2	Arm A - R122 (ENE)	14,505	4%	14,799	4%	0.1
	Arm B - M1 Off Slip	7,143	4%	7,272	4%	0.1
	Arm C - R122 (WSW)	7,440	6%	7,550	6%	0.1
	Arm D - M1 On Slip	3,006	6%	3,061	6%	0.1

The predicted increase in AADT traffic levels associated with the development are between -1.5 and +0.8 dB(A) in the vicinity of the roads assessed for the Opening Year and between -1.4 and +0.8 dB(A) during the Future Design Years. This is largely due to the existing volume of traffic along the surrounding road network onto which the development traffic will travel. Reference to Table 9.15 confirms that the increase in the Opening Year is **negligible, not significant and long-term**. Reference to Table 9.16 and

Table 9.17 confirms that the increases in the Future Design Years are **negligible, not significant and long-term**.

In summary, the predicted increase in noise levels associated with vehicles at road junctions in the vicinity of the proposed development during the operational phase constitutes a **long-term, not significant impact**.

9.6.2.2 Building Services and Plant

Once operational, there will be building services plant items required to serve the residential aspects of the proposed development. Plant items will include comms, metering equipment, water pumps and sprinkler systems. Plant items serving the apartments will be housed internally in plant rooms and therefore noise breakout will be minimal.

The specific requirements for mechanical and electrical plant items for the crèche have not yet been progressed at this stage of the design. It is expected that operation of these plant items will be in conjunction with the hours of occupancy of the building during the day. During the night-time some plant may be required to operate but will do so at low capacity and therefore produce minimal noise emissions.

In this instance, it is best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the proposed development. Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers. Based on the best practice guidance the following plant noise limits have been identified:

Receptors within the development

Based on the guidance outlined the BS 8233 standard, the following external noise levels from the operation of the development itself relate to the external facades of new residential developments to control internal noise levels:

- Daytime (07:00 to 23:00 hrs): 55 dB LAeq,16hrs day
- Night-time (23:00 to 07:00 hrs): 45 dB LAeq,8hrs night

Receptors outside the development

Based on the guidance outlined the BS 4142 standard, the following external noise levels from the operation of the development itself relate to the external facades of new residential developments to control internal noise levels:

- Daytime (07:00 to 23:00 hrs): 50 dB LAeq, 1hrs
- Night-time (23:00 to 07:00 hrs): 44 dB LAeq, 15mins night

Once plant items are designed to achieve the criteria detailed above the impact will be **negative, not significant and long-term** at sensitive receivers.

9.6.2.3 Creche Playground Noise Breakout

There are two standalone crèche buildings within the planned development site. One located in the northeast and the other located in the mid-west of the development.

Measurement of noise levels generated by children playing outdoors at several crèches and kindergartens indicate typical noise levels in the order of 56 dB LAeq,16hr at distance of 5 metres. The closest NSL is approximately 5 metres from the standalone crèche play area. Due to the creche play area only being in use for a few hours every day the noise level produced will be below 55dB LAeq, 16hr and the external noise

criteria for the NSL will be met. Therefore, it is expected in the absence of specific mitigation measures that there will be a **negative, not significant and long-term** impact at the closest off-site receptors.

9.7 'WORST CASE' SCENARIO

9.7.1 CONSTRUCTION PHASE

Reasonable worst-case estimates have been used as part of this assessment as set out in the various sections of this report.

9.7.2 OPERATIONAL PHASE

Reasonable worst-case estimates have been used as part of this assessment as set out in the various sections of this report.

9.8 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

9.8.1 CONSTRUCTION PHASE

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the public.

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, and also by referring to the preliminary Construction Environmental Management Plan (CEMP).

9.8.1.1 Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether said item can be replaced with a quieter alternative.

9.8.1.2 Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures will be considered:

- The use lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

9.8.1.3 Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

On typical piling sites the major sources of noise are essentially mobile, and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in

location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

9.8.1.4 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation.

9.8.1.5 Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. piling), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

9.8.1.6 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

9.8.2 OPERATIONAL PHASE

9.8.2.1 Building Services and Plant

The assessment outlined previously has specified noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable.

To achieve these noise limits, consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques. Some examples of these measures are as follows:

- Duct-mounted attenuators on the atmosphere side of air moving plant;
- Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas;
- Solid barriers screening any external plant; and
- Anti-vibration mounts on reciprocating plant.
-

In addition to the above, the following measures will be adopted to minimise potential noise disturbance for neighbours:

- All mechanical plant items (e.g. motors, pumps etc.) shall be regularly maintained to ensure that excessive noise generated by any worn or rattling components is minimised;
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document; and
- Plant items will be selected such that site noise emissions do not contain tonal or impulsive characteristics at nearby noise sensitive locations.

9.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

9.9.1 CONSTRUCTION PHASE

9.9.1.1 Construction Noise

The use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, and noise monitoring during this phase will be implemented. With the inclusion of the various noise and vibration control measures on site discussed in 9.8.1, it is expected that calculated noise levels in Table 9.14 can be reduced by 5 to 10 dB.

For early-stage demolition and excavation works, there is potential for construction noise levels to remain above the CNT at NSL 1 by the order of 5 to 10 dB during specific phases of work. Whilst the adopted CNT has the potential to be exceeded for specific activities, the residual noise levels can be controlled to below the absolute construction noise limit of 75 dB $L_{Aeq,T}$ typically applied for urban sites during all phases of work. Additionally, the works are expected to be completed within the temporal criteria outlined in Section 9.2.1.1 and, hence, an overall **negative, slight to moderate and brief** impact associated with these works.

During all other construction phases, noise levels can be controlled to within the CNTs at all NSLs thus resulting in a **negative, slight to moderate and short-term impact**.

9.9.1.2 Construction Phase Traffic Noise

The residual noise impact will be **negative, not significant** and **short-term** for this phase.

9.9.1.3 Construction Phase Vibration

Vibration impacts during the construction phase will be **negative, not significant and short-term**.

9.9.2 OPERATIONAL PHASE

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby NSLs. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The impact from building services and plant is predicted to be **negative, not significant and long term**.

9.9.2.1 Additional Traffic on Roads

The predicted change in noise levels associated with additional traffic is expected to be **negligible, not significant** and **long-term** along the existing road network.

9.9.2.2 Building Services and Plant

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby NSLs. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The impact from building services and plant is predicted to be **negative, not significant and long term**.

9.9.2.3 Crèche Playground Noise Breakout

Any change in noise levels associated with the crèche playgrounds on site are expected to be **negative, not significant** and **long term**.

9.10 MONITORING

9.10.1 CONSTRUCTION PHASE

During the construction phase, noise monitoring will be undertaken at sample locations representative of the nearest sensitive locations to ensure construction noise limits outlined in Table 9.1 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: *Acoustics – Description, measurement and assessment of environmental noise Part 1* (2016) and *Part 2* (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.

It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

9.10.2 OPERATIONAL PHASE

There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be imperceptible.

9.11 OPERATIONAL PHASE – ACOUSTIC DESIGN STATEMENT

The Acoustic Design Statement (ADS) has been presented separately as it refers to the inward impact assessment of the residential properties within the development, rather than the outward impact assessment carried out in Section 9.6.

9.11.1 STAGE 1 – NOISE RISK ASSESSMENT

9.11.1.1 Methodology

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment. Figure 9.1 previously presents the basis of the initial noise risk assessment, it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

It should be noted that a site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period, and the site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times a night.

Paragraph 2.9 of ProPG states that:

“The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a “typical worst case” 24 hour day either now or in the foreseeable future.”

ProPG states the following with respect to the initial risk assessment:

“The risk assessment should not include the impact of any new or additional mitigation measures that may subsequently be included in development proposals for the site and proposed as part of a subsequent planning application. In other words, the risk assessment should include the acoustic effect of any existing site features that will remain (e.g. retained buildings, changes in ground level) and exclude the acoustic effect of any site features that will not remain (e.g. buildings to be demolished, fences and barriers to be removed) if development proceeds.”

9.11.1.2 Noise Risk Assessment Conclusion

Giving consideration to the noise levels presented in Section 9.3.9 earlier, the initial site noise risk assessment has concluded that the level of noise risk across the site is 'low to medium risk'.

ProPG states the following with respect to low and medium risks:

Low Risk At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.

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

9.11.2 STAGE 2 ASSESSMENT

9.11.2.1 Element 1 – Good Acoustic Design Principles

Section 2.23 of the ProPG outlines the following checklist for Good Acoustic Design:

- Check the feasibility of relocating or reducing noise levels from relevant sources;
- Consider options for planning the site or building layout;
- Consider the orientation of proposed building(s);
- Select construction types and methods for meeting building performance requirements;
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc;
- Assess the viability of alternative solutions; and,
- Assess external amenity area noise.

In the context of the proposed development, each of the considerations listed above have been addressed in the following subsections.

Relocation or Reduction of Noise from Source

Due to the size and scale of the residential units in the development it is not practicable to screen the buildings from the main noise source of the road.

Planning, Layout and Orientation

As part of the project design, the majority of the amenity areas are set back from the roads boundaries and screened from the road traffic noise by the developments buildings. The area identified with elevated noise levels front the Clonard Road and new proposed road however only a portion of the rooms within face the roads, with the remaining facades will have enhanced glazing and ventilation specifications.

Selection Construction Types for Meeting Building Regulations

Constructions for external walls and roof of the development will offer significantly higher levels of sound insulation performance compared to the glazing, hence noise ingress via this pathway will be minimal. As is typically the case in any residential building, the glazed elements and any required ventilation paths to

achieve compliance with Part F of the Building Regulations will be the weakest elements in the façade in terms of sound insulation performance.

Consideration will therefore be given to the provision of suitable glazing and acoustic ventilators where required to achieve the required level of sound insulation to control both road traffic and air traffic noise intrusion. For units where it will not be possible to achieve the desirable internal acoustic environments with windows open, the proposal here will be to provide dwelling units with glazed elements and ventilators that have good acoustic insulation properties so that when the windows are closed the noise levels internally are good. Inhabitants will be able to open the windows if they wish, however, doing so will increase the internal noise level. This approach to mitigation is supported in ProPG where it states the following (note emphasis has been added in bold),

*“2.22 Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; **occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open.** Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents “*

2.34 Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide “whole dwelling ventilation” in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal LAeq target noise levels should not generally be exceeded.”

It is very important to note that it is impractical to achieve the good internal noise levels with windows open across the vast majority of development sites in close proximity to major infrastructure such as roads or airports. Such sites would need to be classified as having a negligible risk in accordance with the ProPG noise risk assessment approach. For this reason, there are no guidance documents either at a local level or an international level that AWN is aware of which would support the approach of achieving the ideal internal noise levels only in the open window scenario. It is therefore considered entirely correct and justifiable to provide building facades with a moderate degree of sound insulation such that with windows closed but vents opened a good internal acoustic environment is achieved.

Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc.

The acoustic design measures that are proposed as part of the design i.e. any upgraded glazing or acoustic passive ventilation are considered to be cost neutral and do not have any significant impact on other issues.

Assess Viability of Alternative Solutions

ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB LAeq,16hr.”

It is noted that a proportion of the amenity areas located on site may be just above the desirable level of 55 dB $L_{Aeq,16hr}$, it is not possible to reduce the noise level across external spaces, due to road traffic noise being the dominant noise source. It is noted that the majority of gardens of new houses will achieve these external noise levels. Efforts have been made to provide private external space to each dwelling to the rear of the houses, and a large external amenity area is located serving the proposed units.

9.11.2.2 Element 2 – Internal Noise Levels

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 (2014) which are set out in Table 9.8.

In addition to these absolute internal noise levels, ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

Discussion on Open/Closed Windows

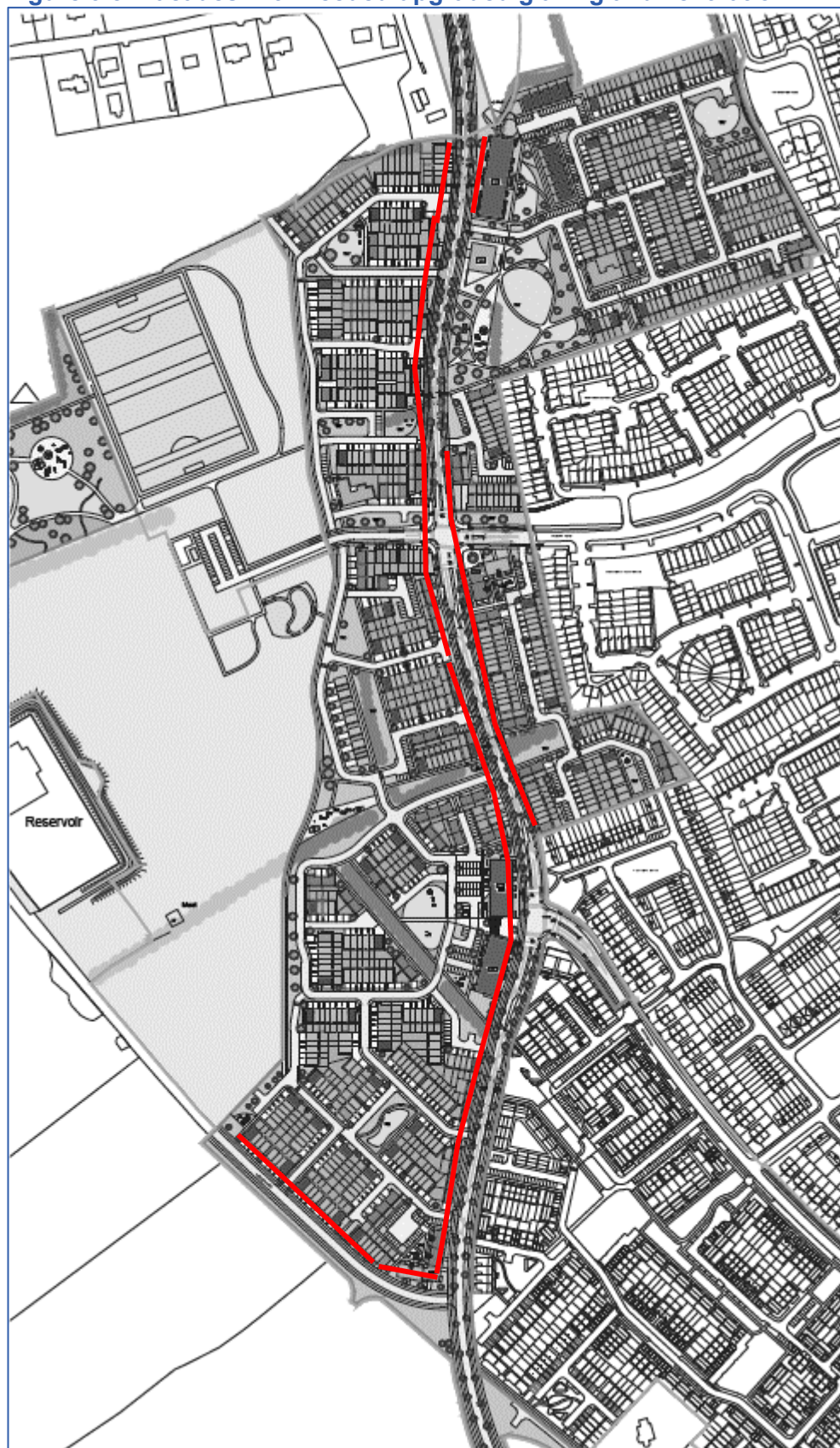
The typical level of sound reduction offered by a partially open window falls in the region of 10 to 15 dB. Considering the design goals outlined in Table 9.8 and a sound reduction across an open window of 15 dB, the free-field noise levels that would be required to ensure that internal noise levels do not exceed good (i.e. at or below the internal noise levels) or reasonable internal noise levels (i.e. 5 dB above the internal noise levels) have been summarised in Table 9.18.

Table 9.18: External Noise Levels Required to Achieve Internal Noise Levels

Level Desired	Day (07:00 to 23:00 hrs)	Night (23:00 to 07:00 hrs)
Good (i.e. at or below the internal noise levels from BS 8233)	50 – 55 dB $L_{Aeq,16hr}$	45 dB $L_{Aeq,8hr}$
Reasonable (i.e. 5 dB above the internal noise levels from BS 8233)	55 – 60 dB $L_{Aeq,16hr}$	50 dB $L_{Aeq,8hr}$

The baseline noise levels presented in Section 9.3 indicate that internal noise levels will not meet either the 'good' or 'reasonable' internal noise criteria when windows are open for rooms overlooking the main road network, hence, mitigation will be required for those facades. Fig 9.5 indicates the rooms or facades that require mitigation to meet the guidance indoor noise thresholds.

Figure 9.5: Facades with needed upgraded glazing and ventilation



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Glazing

Taking account of the measured day and night-time noise levels associated with road traffic from UN1, and calculated noise values from the proposed future road, the glazing specifications in Table 9.19 are applied to the identified facades discussed above. For all other facades within the development there are no specific glazing requirements beyond standard double glazing to meet reasonable internal noise levels at all development buildings

Figure 9.6: Minimum Sound Insulation Performance Requirements (SRI) to Glazing

Element	Octave Band Sound Reduction Index – dB R						dB R _w
	125	250	500	1k	2k	4k	
Glazing SRI to identified facades	24	22	29	39	33	38	33

The specifications provided in Table 9.19 are those determined to achieve the internal noise levels within bedrooms and living rooms in accordance with the design criteria from BS 8233 (2014). This acoustic SRI is not significant in terms of uplift above a standard glazing configuration that would be installed and can be achieved with double glazed system. Alternative specifications will be acceptable provided the internal ambient noise criteria outlined in Table 9.7 can be achieved. During the detailed design stage, the acoustic performance of any glazing systems installed to noise sensitive internal areas will be reviewed alongside the building design to determine compliance with the relevant internal design criteria.

The glazing specifications relate to bedrooms and living spaces. For staircore and windows to non-sensitive spaces, standard double glazing provides a suitable level of sound insulation.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing system. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc.

Wall Construction

In general, all wall constructions (i.e. blockwork or concrete) offer a high degree of sound insulation, much greater than that offered by glazing systems. Therefore, noise intrusion via the wall construction will be minimal. The calculated internal noise levels across the building façade have assumed a minimum sound reduction index of 50 dB R_w for this construction.

Ventilation

The ventilation strategy for the development will be in accordance with Part F of the Building Regulations and will be finalised at the detail design stage. Options which will be considered to achieve compliance with background ventilation requirements will be a closed heat recovery system, adjustable hit-and-miss acoustic ventilators or trickle vents built into the façade or window frames, respectively.

For the proposed development, where passive ventilation forms part of the design, the inclusion of any window trickle vents or through wall vents will be required to achieve a sound insulation performance shown in table 9.20 for apartments when the vent is in the open position. This applies to bedroom, living rooms, study room, kitchens, and other noise sensitive internal spaces. For toilets and stairwells, an acoustic vent is not required.

Figure 9.7: Minimum Sound Insulation Performance Requirements (SRI) to Glazing

Element	Octave Band Sound Reduction Index – dB R						dB D _{n,e,w}
	125	250	500	1k	2k	4k	
Ventilation SRI to identified facades	33.1	32.1	30.8	37.3	46.7	46.8	37

9.11.2.3 Element 3– External Amenity Area Noise Assessment

As previously discussed, some external amenity areas are not expected to achieve the recommended 55 dB L_{Aeq,16hr} in proximity to the road but can be largely achieved across the majority of the site. Nonetheless, where possible, the location of private gardens of the site have building layouts designed to provide screening from the Clonard road traffic noise sources in the vicinity of the site.

9.12 CUMULATIVE IMPACT ASSESSMENT

9.12.1 CONSTRUCTION PHASE

The proximity of the construction works outlined above, indicates that at the nearest NSLs it is possible that cumulative impacts could occur at the nearest receptors should all sites progress construction simultaneously. Chapter 17 of the EIAR outlines the potential cumulative projects (table 17.1 refers). In this scenario elevated construction noise emissions due to cumulative noise are potentially likely to occur at receptor locations as well as a potential increase in the length of time that the receptor will be exposed to construction noise. However, this would only occur during peaks in construction noise over short periods. Hence, cumulative construction impacts will need to be considered and managed during the construction phase. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be **negative, moderate to significant** and **short-term**.

9.12.2 OPERATIONAL PHASE

During the operational phase any cumulative impacts will be due to an increase in road traffic noise. However, given the insignificant levels of noise increase as a result of the traffic associated with this proposed development, it is not expected that cumulative traffic noise will increase by any significant margin as a result of this proposed development.

9.13 INTERACTIONS

For Construction and operational phases chapter 11 traffic and transportation, has been referenced with respect to expected number of vehicle movements in each phase. This data has been used to calculate changes in noise level associated with construction traffic and new operational traffic as a result of the development. This was then used to determine the significance traffic associated with the proposed development, during the construction and operational phases, would have on the noise levels in the area.

9.14 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no experienced difficulties encountered during the completion of this chapter.

9.15 REFERENCES

- ANC, IOA & CIEH (2017). ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development.
- British Standard BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.
- British Standard BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound.
- British Standard BS 5228: 2009 +A1:2014: Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.
- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- Department of Transport Welsh Office, HMSO (1988). Calculation of Road Traffic Noise.
- EPA (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports.
- Fingal County Council Fingal Development Plan 2023 -2029.
- The UK Highways Agency (2020). Design Manual for Roads & Bridges – LA111 -Revision 2.
- ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.
- ISO 9613-2: 2024: Acoustics – Attenuation of sound during propagation outdoors, Part 2.
- WHO (2018). Environmental Noise Guidelines for the European Region.

10.0 LANDSCAPE AND VISUAL

10.1 INTRODUCTION

The purpose of this chapter in the EIAR is to identify and determine the potential effects on the landscape character and visual amenity arising as a result of the proposed Large Scale Residential development within the townlands of Clonard or Folkstown Great, and 'Flemingtown', Balbriggan, Co. Dublin

10.1.1 STATEMENT OF AUTHORITY

This Landscape and Visual Assessment (LVIA) has been prepared by Park Hood Chartered Landscape Architects on behalf of Glenveagh Homes Ltd. Park Hood is a Chartered Member of the Irish Landscape Institute and Landscape Institute UK with extensive experience in preparation of Landscape and Visual Impact Assessments for large scale projects throughout Ireland and the UK (based out of offices in Belfast, Dublin and London).

The primary author is Andrew Bunbury who is a fully qualified Landscape Architect and Chartered Member of the Landscape Institute (CMLI) UK with over 25 years' consultancy experience in the landscape profession across the UK and Ireland. He works between the Dublin, London and Belfast offices of Park Hood where there are 37 members of staff including a further sixteen Chartered Landscape Architects.

All work is undertaken in compliance with the *Landscape Institute's Code of Standards of Conduct and Practice for Landscape Professionals* and checked in accordance with Park Hood's IMS (ISO 14001:2015 and ISO 9001:2015).

10.1.2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The development will consist of the construction of 815 no. dwellings (610 no. houses, 194 apartments & 11 no. later living dwellings), a portion of the C-Ring Road, open space, community building/retail floorspace and 2 no. creches as follows:

- *Demolition of existing single storey dwelling (c. 154 sq. m) and agricultural outbuilding (c. 366 sq. m) located to the south of Flemington Lane;*
- *Provision of portion of 'C-Ring Road' from Flemington Lane [to include junctions and ancillary footpaths, cycle paths, lighting, bus stops, boundary wall to adjoining owner, and tie in to existing roads/agricultural access points] to link into the existing R122 roundabout with vehicular access also from the Boulevard Road, Hamlet Lane, & Flemington Lane along with associated amendments to the layout of the Local Road L1130 (also known as the Clonard Road including the creation of a cul de sac arrangement to the south of the C-Ring Road); the provision of car parking spaces (1,037 no.), bicycle parking spaces (1,144 no.) and all internal roads and footpaths and bicycle and bin stores, & substations;*
- *Provision of a community pavilion (2 storeys) comprising community floorspace of c. 730 sq. m (with flexible internal spaces) along with a retail unit (c. 419 sq. m) at ground floor of apartment Block F as well as 2 no. 2 storey creches c. 530 sq. m each with ancillary parking and open space areas;*
- *610 no. terraced, semi-detached & detached houses comprising 318 no. 2-bedroom houses (2 storey), 254 no. 3-bedroom houses (2 storey) and 38 no. 4-bedroom houses [house types B1/F4/F5 with variants] 3 storeys;*
- *194 no. apartments in 5 no. apartment buildings (52 no. studio apartments, 87 no. 1 bedroom apartments, 51 no. 2 bedroom apartments and 4 no. 3 bedroom apartments - all apartments with*

terrace or balcony on elevations) as follows: Block A [4 storeys & 64 no. apartments] comprising 47 no. 1 bedroom apartments and 17 no. 2 bedroom apartments; Block C [Part 3-4 storeys & 18 no. apartments] comprising 10 no. 1 bedroom apartments, 6 no. 2 bedroom apartments & 2 no. 3 bedroom apartments; Block F [Part 4-5 storeys & 48 no. apartments] comprising 36 no. 1 bedroom apartments and 12 no. 2 bedroom apartments; Block G [Part 3-4 storeys & 40 no. apartments]; comprising 30 no. 1 bedroom apartments and 10 no. 2 bedroom apartments; Block H [part 3-4 storeys & 24 no. apartments] comprising 16 no. 1 bedroom apartments, 6 no. 2 bedroom apartments & 2 no. 3 bedroom apartments;

- 11 no. single storey 2 bedroom later living houses with associated communal open space;
- 5.26 hectares of open space comprising Class 1 Open Space (c. 2.39 hectares in the western separate parcel of land), Public open space c.2.87 hectares, hard and soft landscaping (including public lighting & boundary treatment, ESB substations, bicycle and bin stores) and communal/semi-private open space for the proposed apartment units;
- Provision of surface water attenuation measures, connection to water supply, provision of foul drainage infrastructure (and Uisce Eireann diversion) to Uisce Eireann specifications and all ancillary site development, construction, and landscaping works including reprofiling of the site where required; and
- The proposals will replace the previously permitted LRD under planning reg. ref. LRD0006/S3 & ACP Ref: 319343-24.

10.2 ASSESSMENT METHODOLOGY

10.2.1 RELEVANT LEGISLATION & GUIDANCE

The overall approach and methodology undertaken in this chapter are based on techniques and guidance in the *Guidelines for Landscape and Visual Impact Assessment*, (3rd Edition, 2013) published by The Landscape Institute and the Institute of Environmental Management and Assessment (GLVIA). Guidance for this chapter also includes the following:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports published by EPA (2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment published by the Department of Housing, Planning and Local Government (2018);
- Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals (2019) in conjunction with 3D Design Bureau who are preparing the accompanying photomontages; and
- Landscape Institute Technical Guidance Note 2/19: Residential Visual Amenity Assessment (RVAA).

10.2.2 SUMMARY OF LVIA OBJECTIVES AND KEY TASKS

The objective of the LVIA is to evaluate the likely significance of landscape character and visual amenity effects to the Application Site and Study Area to assist the determining authority in considering the acceptability of the Proposed Development. It is based on the interpretation of the physical and aesthetic characteristics following criteria and terminology partially drawn from *Principles and Overview of Processes* (Chapter 3) within the GLVIA. The LVIA focuses on key effects and issues as follows:

- The effect of the proposed development upon the landscape resource;

- The effect of the proposed development on the perception of the landscape; and
- The effects arising from the proposed development on visual amenity.

The LVIA methodology can be summarised as undertaking the following key tasks:

- Site surveys and visits;
- Assessing the baseline Landscape Setting and Conditions;
- Evaluation of key components of the proposed development based on site layouts, plans, layouts, plans and elevations including any Mitigation and Enhancement Measures;
- Assessment of Landscape and Visual Effects; and
- Conclusion.

10.2.2.1 Definition of 'Landscape'

For the purpose of this assessment, this chapter adopts the definition of landscape presented in the European Landscape Convention and refers equally to areas of rural countryside and urban – built up – areas (typically historically referred to as 'townscape'). The definition of landscape is:-

'An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.'

The assessment process helps identify the effects of the proposed development on views and on the landscape.

10.2.2.2 Assessment of Both 'Landscape' and 'Visual' Effects

Landscape and visual effects can be quite different and are assessed separately; although the process is similar, and effects ultimately arise as a result of combined impacts upon the landscape and visual amenity of a proposed development. Developments can have significant visual effects but no impact on landscape/townscape character and some can be vice versa.

Landscape Effects are the effects on landscape as a resource and defined as follows:

"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner." (GLVIA3 paragraphs 5.1 and 5.2)

Visual Effects are the effects on Views and Visual Amenity and summarised as follows:

"...establish the area in which the development may 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." (GLVIA3 paragraph 3.13)

10.2.2.3 Photomontages & Visualisations

Eleven photomontages from the representative viewpoints in and around this part of Balbriggan and Flemington are contained in the Photomontages booklet prepared by 3D Design Bureau (2025) that

accompanies this planning application. Park Hood based the viewpoint selection on the Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals. The guidance also includes reference to photographic technology, including camera selection, choice of lens and printing which were taken into account by 3D Design Bureau (who have set out further details on methodology and presentation in an Appendix to their booklet - CGI's and Verified Views booklet).

10.2.3 ESTABLISHING THE STUDY AREA

The Study Area includes the Application Site itself, the wider landscape and Balbriggan townscape where the proposed development may have an influence either directly or indirectly. There is no specific guidance on extents of study areas applicable to this type of development. Given the baseline landscape/townscape setting and context, the study area is assessed as being primarily within a short-range area, generally within 1km of the site, to the east of Balbriggan and elevated or exposed lands to its south following site survey work which confirmed any significant views are within this range. However, reference to the wider area is made in relation to landscape character and any connections between this and local and national planning policies and guidance.

10.2.4 BASELINE LANDSCAPE ASSESSMENT METHODOLOGY

The baseline study studies extend to include to the wider context into which the proposed development will be introduced. The baseline description of existing conditions forms an objective evaluation of the townscape / landscape character and visual amenity of the study area. This forms the base against which the townscape / landscape and visual effects deriving from the proposed development can be identified, assessed and measured. It involves a desk-top analysis and review of material including:-

- National and Regional Landscape Character or local Landscape Character Assessments;
- Review of historical planning applications on the Application Site;
- Existing National, Regional or Local Designations and relevant Planning Policy;
- Current and historical Ordnance Survey Ireland (OSI) Maps evidence;
- Aerial Photographs via Bing, Google and OSI; and
- Relevant environment / ecology, cultural heritage, historical and archaeology evidence.

The baseline assessment included study of Ordnance Survey Ireland historical and recent mapping to assess how this part of Balbriggan has developed since the 19th century as well as allow for calculations of relevant distances or areas.

As part of the baseline assessment, the combination of desk-top analysis and site survey allows a judgment to be made on the key elements that contribute to the landscape character and its wider condition (positive, neutral or negative) and wider value and sensitivity as set out in **(Table 10.1)**

Landscape value, quality and sensitivity are affected by factors including:

- (i) whether the resource is common or rare;
- (ii) whether it is considered to be of local, regional, national or global importance;
- (iii) whether there are any statutory or regulatory limitations / requirements relating to the resource;
- (iv) the quality of the resource;
- (v) the maturity of the resource, and

(vi) the ability of the resource to accommodate changes.

Table 10.1: Determination of Landscape Value and Sensitivity

Terminology	Definition	Summary
Highest Value Landscape	Nationally or regionally important landscape with high quality, highly valued rare or unusual features recognised by designation such as Areas of Scenic Value or World Heritage Sites. Distinct landscapes that exhibit a strong structure and character with valued features that combine to give the experience of scenic quality, tranquillity, rarity and harmony. Negligible pedestrian and traffic conflict.	Very vulnerable to change. <i>High Sensitivity</i>
Very Attractive Landscape	Locally or regionally designated landscapes or areas where local evidence indicated as being more valued than the surrounding area.	Some ability to absorb change in some situations without having significant effects. <i>Medium Sensitivity</i>
Medium Landscape	“Everyday” or community / undesignated landscapes which may be appreciated by the local community but has no or little wider recognition of its value	Able to accommodate change without significant effects. <i>Low Sensitivity</i>
Poor Landscape	Low importance and degraded landscapes with few redeeming features. No evidence of being valued by the community	Able to accommodate change without significant effects. <i>Low Sensitivity</i>

This LVIA considers how the proposed development would impact on existing landscape elements and resources which are normally associated with the direct effects on the Application Site itself. The indirect impacts of the proposed development on the wider landscape are assessed with reference to landscape types or character areas. See (Table 10.2)

This is affected by factors including:

- the physical extent and nature of the key elements that make up the proposal;
- the landscape context of these effects; and
- the time-scale of impact, such as whether it is temporary (short, medium or long term), permanent with reversible potentials, or irreversibly permanent.

Table 10.2: Magnitude Criteria for Landscape Character Effects

Terminology	Definition
Substantial	Total loss or major alteration to key elements / features / characteristics of the baseline (i.e. pre-development) landscape and /or introduction of elements considered to be totally dominant when set within the attributes of the receiving landscape.

Terminology	Definition
Moderate	Partial loss or alteration to one or more key elements / features / characteristics of the baseline (i.e. pre-development) landscape or view and /or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape.
Slight	Minor loss or alteration to one or more key elements / features / characteristics of the baseline (i.e. pre-development) landscape or view and /or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape.
Negligible	Very minor loss or alteration to one or more key elements / features / characteristics of the baseline (i.e. pre-development) landscape or view and /or introduction of elements that are not uncharacteristic with the surrounding landscape - approximating the 'no change' situation.

In those instances where there would be no change to the landscape, the magnitude is recorded as 'zero' and the level of effect as 'no change.'

10.2.5 BASELINE VISUAL AMENITY ASSESSMENT

Visual Effects are concerned wholly with the effect of the development on views, along with the general visual amenity and are defined by the Landscape Institute in GLVIA, Paragraph 6.1 which states:-

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements."

The baseline studies establish the area from which the proposed development may potentially be visible and the different groups of people ("visual receptors") who may experience views or changes to view context.

Viewpoints are usually identified in locations that are publicly accessible, such as roads, public realm / domain areas, footpaths or publicly accessible heritage sites. Selection is also based on a determination of the extent of visibility towards the proposed development site or from locations where there may be significant numbers of visual receptors who will see the proposed development e.g., known local amenities or residential areas. Viewpoints are chosen to be representative, specific or illustrative and cover as much of the study area as reasonable or necessary and address all areas where there may be changes in terms of views or visual amenity.

Viewer sensitivity is based on the nature of the visual receptor (resident, tourist, commuter etc.) and the visual quality or value attached to a particular view. See (Table 10.3)

Table 10.3: Viewer Sensitivity and Types

Terminology	Definition	Summary of Visual Receptor Type
High	Notable views of heritage assets, quality, valued or scenic landscapes. Views that may be designated or feature in guidebooks, scenic tours, associated with culture, literature and art or an important contributor to experience.	People engaged in outdoor activity whose interest is likely to be focused on the landscape or particular views. e.g. hill-walkers, tourists, scenic tours, users of public rights of way.

Terminology	Definition	Summary of Visual Receptor Type
		Residents / Communities living within close proximity of the proposal
Medium	Ordinary views where the reason for visual receptor to be in the area and does not involve or depend upon an appreciation of the views of the landscape.	Outdoor activity with focus on recreation, sports or water-based activities such as golf, mountain biking, or country sports. Travellers on road and rail.
Low	Areas that may be viewed by the majority as incidental landscapes where the focus of the viewer is on their work or activity and the setting is not important to the visual amenity or quality of working life.	Landowners for proposal. Workers with employment related to construction and management / maintenance activity and likely to have a low interest or appreciation of the view.

The visual effects deriving from the proposed development are based on the combined judgement of the anticipated change in nature, visual amenity and duration of the particular view (magnitude) and the nature of the visual receptor (sensitivity). The magnitude and nature of visual effects are based on a number of factors including:

- Scale of change;
- Contrast in terms of mass, colour, form and texture deriving from new feature(s);
- Extent of intervening vegetation (and seasonality if deciduous) or buildings and topography;
- Speed of passing visual receptor (and how long view is experienced);
- Angle and elevation of view e.g. oblique, direct, perpendicular;
- Nature of backdrop or skyline; and
- Duration of change or effect.

Where mitigation measures are proposed or relevant, these are described as part of any judgement. **See (Table 10.4)**

Table 10.4: Magnitude Criteria for Visual Effects

Magnitude	Definition
Major	A major change or obstruction of a view that may be directly visible, appearing as the dominant and contrasting feature appearing in the foreground.
Moderate	A moderate change or partial view of a new element within the view that may be readily noticeable, directly or obliquely visible including glimpsed, partly screened or intermittent views, appearing as a noticeable feature in the middle ground.
Slight	A small level of change, affecting a small part of the view that may be obliquely viewed or partly screened and/or appearing in the background landscape. May include moving views at speed. The proposal forms a minor component in the wider view which might be missed by the casual viewer / observer.

Magnitude	Definition
Negligible	The proposal is barely discernible or may be at such a distance that it is very difficult to perceive equating to a no-change situation

10.2.6 DURATION OF EFFECTS

The duration of effects can be assessed as either 'short-term,' 'medium-term' or 'long-term.' Short-term is considered to be up to 1 year, medium-term is considered to be between 1 and 10 years and long-term is considered to be greater than 10 years. Note that this Proposed Development is regarded as being permanent and long-term in LVIA terms.

10.2.7 SIGNIFICANCE OF EFFECTS

Final judgment is made about which landscape effects are significant. Significance of an effect is determined by the combination of sensitivity of the affected receptor(s) and the predicted magnitude of change which combine to form a level of effect. **See (Table 10.5)**

This LVIA bases 'Significance' of effects on the following definitions:

- 'Significant' in the Oxford Dictionary 2025 is defined as 'Sufficiently great or important to be worthy of attention; noteworthy.'; and
- 'Significance' in the GLVIA guidelines 2013 is defined as 'A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.'

Table 10.5: Summary Scale of Significance

- Sensitive views or visual receptors; - Effects on recognised scenic, rare or distinctive landscapes; - Effects on mature or diverse landscape elements, features, characteristics, aesthetic or perceptual qualities; - Large scale changes.	More Significant ↕
- Effects on poorer condition or degraded landscapes; - Effects on low sensitivity visual receptors; - Small scale changes	Less Significant

Significance of visual effects is not absolute and can only be defined in relation to each development and its specific location. Usually an effect is considered 'significant' if the level of effect is 'moderate/substantial' or 'substantial.' The significance of landscape and visual effects is determined by cross-referencing sensitivity of landscape or view with the magnitude of change. **See (Table 10.6)**

Table 10.6: Significance Criteria

Magnitude of Change	Landscape and Visual Sensitivity			
	High	Medium	Low	Negligible
High	Substantial	Substantial / Moderate	Moderate	Moderate / Slight
Medium	Substantial/ Moderate	Moderate	Moderate / Slight	Slight
Low	Moderate	Moderate / Slight	Slight	Negligible / No effect
Negligible	Slight	Slight / Negligible	Negligible / No effect	Negligible / No effect

10.2.8 NATURE OF LANDSCAPE AND VISUAL EFFECTS

The assessment process aims to be objective and quantify effects as far as possible. However, landscape and visual assessment has aspects of it that can be considered subjective. Magnitude of change to a view can be factually defined but any subsequent objective assessment should be based on professional training, experience, observation, evidence and informed opinion. **See (Table 10.7)**

Table 10.7: Nature of Landscape and Visual Effects

Magnitude	Definition
Positive Effect	A change that improves the quality of the landscape character and fits very well with the existing setting.
Neutral	A change which does not affect the scale, landform or pattern of the landscape and maintains existing quality.
Adverse Effect	A change which reduces the quality of the landscape and cannot be fully mitigated.

10.2.9 SITE SURVEYS AND INVESTIGATIONS

Park Hood have been involved in assessment and work on this site related to landscape matters since 2023 with the most recent surveys undertaken between May and September 2025. These works included coordinating with Charles McCorkelll Arboricultural Consultancy in relation to tree and hedgerow surveys and Altamar in relation to ecology matters on the site including consideration of design, mitigation and enhancement measures.

10.2.10 CONSULTATIONS

Following the S247 Meeting with Fingal County Council on 14th May 2025, there were changes and amendments undertaken to this proposal to address various items and issues raised including the following:

- Plant selection was carried out with reference to the permitted development on the Flemington Lands and the adjacent development of Ladywell, Balbriggan. Species have been selected for their tolerance to possible salt spray from the coast given the close proximity Balbriggan is to the sea;
- Provision of a Green Infrastructure Plan to include all existing and proposed features;
- Requirement for Tree Survey;
- Coordination with ecologists in relation to ecological corridors;
- Playground design and requirements (including review of play area in proximity to archaeology features and incorporate play area to the south) in line with Fingal County Councils 'Space for Play' Policy;

- Passive surveillance of open spaces and promotion of pedestrian links between these, adjacent developments and Class 1 Park;
- Street tree plans;
- Clarify usability of areas of open space and include a map to show how this was calculated; and
- Layout to be amended to include buffer to the Class 1 Park to the west.

These amendments were presented at the S32D Meeting on 30th September 2025 alongside other changes related to layout, drainage, transport, architecture and general planning. Fingal County Council Parks and Green Infrastructure Department reiterated issues related to open space provision, landscaping, and integration with existing green assets and the request for a Green Infrastructure Plan. They further requested that landscape architects, arborist and ecologist work together in relation to hedgerow assessments and management with an objective to establish bio-diversity net gain. Further advice was provided on play area design, park entrance, boundary treatments, native species planting, biodiversity-friendly landscaping, street tree plans and general works to comply with Fingal's Green Infrastructure Strategy or Development Plan.

No additional representative viewpoints were requested, and no further advice was provided in relation to the scope of the LVIA.

10.3 EXISTING ENVIRONMENT (BASELINE SCENARIO)

The Application Site comprises 24.91 hectares of land set off Flemington Lane and Clonard Road to the west of the coastal town of Balbriggan in north Co. Dublin. Dublin City centre is located approximately 29km to the south. **See (Figure 10.1)**

10.3.1 THE APPLICATION SITE

10.3.1.1 Landcover and Vegetation

The site comprises farmlands set out across all or part of eight fields that are in pasture or used for arable farming purposes. The fields were managed intensively with little room between the field edge and boundary hedges though there has been less management or use recently resulting in rough grassland. Fields are bound by sparse and gappy hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) dominated hedgerows with some sections including colonising scrub such as brier, gorse (*Ulex europaeus*) and ivy (*Hedera helix*). The site boundaries to the west abut further open fields in pasture or arable use and rears of private properties off Flemington Lane with the boundaries defined by mixed quality hedgerows. Recent landscape works have been undertaken to create a new park and playing field area across 2.39 hectares to the north-west of the Application Site as part of Phase One of open space development (as per Planning Reference F15A/0550 and subsequent permissions). To the east, the boundary abuts housing estates that form part of the wider urban townscape of Balbriggan which extends across the low-lying lands towards the shoreline and harbour approximately 2km distant.

Trees or woodland areas are very limited with the topographical survey only picking up field hedgerows and occasional trees. There are some self-seeded ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*) within the hedgerows, but the Application Site has an open and exposed character. A Tree Survey was undertaken by Charles McCorkell in May 2025 and identified 93 trees, tree groups or hedgerows and categorised their quality and suitability for retention. See Tree Survey in Volume III Appendix I).

Figure 10.1: Site Location Map set into Aerial Photograph



Nearly 80% of these were assessed in terms of arboriculture quality as being Category C described as “Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories” and in terms of landscape quality as “Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits”. No trees were rated in Category A (High Quality). 7.5% of the trees / hedgerows were rated as being in “... such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years”.

Photo 10.1: View south across Application Site lands from near new sports pitch / open space with Balbriggan town edge to the east (right)



There were 2 no trees and 4 no. sections of hedgerow to the north of the site towards Flemington Lane and Flemington Park rated Category B with their qualities noted as *“Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation”*.

The ecology survey identified no significant habitats, designated sites, *rare or threatened plant species* on the Application Site. Further it noted that there are no invasive plant species on the site.

10.3.1.2 Landform, Topography and Drainage

The site is made up of gently undulating farmlands that generally slope towards the Irish Sea coastline approximately 2km to the east. The levels have not been subject to any historical changes with the lands used for farming purposes and the only grading appears to have been related to agricultural use and would not be categorised as significant. The general levels fluctuate between +33m to the south and +68m on the western boundary. Towards the Clonard Road there has been modification to historic levels to allow development of the Balbriggan Water Supply Scheme and Reservoir that extends across 1.75 hectares. To facilitate its construction, a steep and formal embankment rising approximately 3m in height and 150m in length is located just beyond the western site boundary.

Photo 10.2: View from core of Application Site looking eastwards towards current edge of Balbriggan



No watercourses or water bodies are noted on OSI Maps or evidenced in the topographical surveys. All fields are self-draining with ditches or sheughs located on field boundaries aside or below hedgerows.

10.3.1.3 Townscape History and Settlement

OSI Map evidence shows that the field structure and layout has remained largely unaltered since the 19th century. The Application Site lands are shown as being devoid of features such as lanes, trees, buildings or names with the only lines being those of field boundaries. The only additional feature by the time of the Cassini Maps (1940s) is an overhead 98kv ESB line. The built edge of Balbriggan is located just over 1.5km at this time with intervening lands annotated as medium scale fields.

There are no buildings, formal roads, or established access points to the site, and as the lands are privately owned, public access is discouraged. A new road has recently been constructed from the end of Hamlet Lane across the site to provide access to lands to the north-west of the site where the new public park and sports pitch is located.

Photo 10.3: View from Hamlet Lane looking west along new road and footpaths linking to the new public park to the north of the Application Site



The routes or alignments on the nearest roads (namely Flemington Lane and Clonard Road) are very similar to that shown on 19th century OSI Maps though they have been clearly widened and formalised since that time. While the site itself has remained relatively similar, Balbriggan to the east extended significantly over the 20th century with housing estates enveloping the lands between the eastern site boundary and historic town core and shoreline. The estates include Taylor Hill Grange, Bremore Pastures and Flemington Park which are accessed off new distributor roads including Boulevard Road off the R122 Clonard Road to the south.

Photo 10.4: View north over west Balbriggan from Clonard Boulevard Road to the south of Application Site



Apart from the new link to the public park / sports pitch, there is no access to the site from the nearest housing estates to the east. Several side and rear gardens of properties within these estates back onto the Application Site. These housing estates comprise detached, semi-detached and terraced houses set

off short cul-de-sacs and lanes. The estates merge into further urbanised landscapes to the east towards Balbriggan centre including sports pitches, institutional lands, open spaces, graveyards, commercial / retail lands and parklands.

Flemington Lane to the north is a minor category road that links the R132 Road to the east and Flemington Road to the west and defines, in part, the current northern extent of Balbriggan town. The road is set between low rise houses (including linear developments of bungalows) and hedgerows for much of its route that limit views across areas of adjacent townscape or landscapes.

Clonard Road, to the west is a minor road though the section beyond a roundabout (constructed c. 2008) to the south is part of the R122 Road. It is set between well-established hedgerows for much of its route through the predominantly rural landscape of the Clonard Cross townland. The R122 is the primary route from the M1 Motorway Junction 6 (approximately 1km distant) to Balbriggan.

10.3.1.4 Adjacent Landscape Character

Balbriggan (*Baile Brígin*) is a coastal town that had a recorded population 24,322 in the 2022 Census. While the town has no recognised date of its first buildings or establishment, records suggest it grew out of a small fishing village in the 18th and 19th century with linen and cotton factory developments (including the Smith Stocking Mill and Charles Gallen & Company) and harbour improvements (1763).

While there are still local commercial and industrial businesses, the close proximity of Dublin City resulted in its expansion being, in part, related to it being a commuter settlement. The historical core includes several 19th century buildings including the Balbriggan Market House (c. 1811), the National Irish Bank building (c.1885), Balbriggan Court House (c.1844), Balbriggan Railway Viaduct, (c.1843), St. Peter and Paul's Church (1842) and St. Georges Church (1813). Other historic buildings of note, away from the town centre are the Bremore Norman Castle (14th century) located 1.3kmeast of the Application Site and a Martello Tower (c.1805), 1.8km distant. There are several large-scale developments on the outskirts of the town, including retail outlets, shopping centres, sports facilities such as golf clubs, rugby and GAA, commercial / industry areas set between a rural edge to the south, west and north and Irish Sea coastline to the east.

Photo 10.5: View west from open space aside Hastings Green towards Application Site



The town is served by the R132 Road with the R122, R137 and several minor roads also converging on the town. Balbriggan Train Station, located 1.8km from the Application Site, opened in 1844 and is on the

Belfast-Dublin mainline and also part of the commuter rail services with an estimated 2,200 commuters each day.

The Fingal Development Plan 2023-2029 notes that Balbriggan “... has developed as a major residential town with a young and expanding population of 20,000 which has more than doubled over the past 20 years. Major infrastructural projects involving upgrades to the water supply, foul drainage and roads infrastructure have been carried out throughout the town and its environs.”

The newer housing estates and developments to the west of Balbriggan largely date from the last couple of decades and comprise a mix of terraced, detached and semi-detached single, dormer and two-story houses with enclosed rear gardens. The houses are set off small lanes and cul-de-sacs with open front gardens planted with occasional trees and ornamental shrubs. The close proximity of the town and nature of residential and commercial developments has led to fragmentation of the urban / rural edge or interface to the west (and the Application Site). In summary, the townscape of Balbriggan has elements of a transitional character being marked by its maritime and industrial past but increasingly suburban and diverse, shaped by rapid population growth in recent decades.

To the west, the landscape is characterised by open rural farmland in pasture and arable that lies over a gently undulating topography. The most significant built feature is the M1 Motorway, approximately 1km distant which severs the landscape. The undulating nature of the countryside together with the presence of larger properties and tree belts has resulted in a varied but mostly rural and farmed landscape.

The permitted LRD (LRD0006/S3) on the majority of the subject lands comprises 564 no. dwellings so the principle of residential development on these lands has already been accepted, by An Coimisiún Pleanála.

10.3.1.5 Public Amenities and Facilities

The site is privately owned and there is no public access, paths or rights of way. A review of information provided by Fáilte Ireland shows that there are no promoted tourism amenities, sites, routes or attractions on or in close proximity to the Application Site. To the west, south and north, the lands are primarily private farmland and there are no amenities or facilities in this area other than the local road network.

As part of previous phases of development in the area, a new Class 1 Public Open Space including a playing pitch is located to the north-east of the site towards Flemington Lane and Clonard Road.

Photo 10.6: View of new Class One Public Open Space and playing pitch at Flemington Lane



The town and coastline include a number of public parks with the nearest being open spaces associated with the recently constructed Taylor Hill and Chieftain's Way estates. Being enclosed by dense residential blocks, there are no views from these areas. Bremore Castle is located off Drogheda Street, 1.3km to the east, towards the coast. While set in an open landscape including a sizeable car park, the rising lands to the west and intervening townscape ensure there are no views of the Application Site.

In the vicinity of Bremore Castle and off Hamlet Lane to its west, are a number of sporting facilities including O'Dwyer's GAA pitches and Balbriggan FC. The closest of these are approximately 800m from the Application Site but there are no views due to intervening townscape.

The coastline to the east provides the basis for some public amenity including Balbriggan Beach (1.8km distant), Bremore Bay Beach (1.57m distant) which are linked by footpaths that include playgrounds and bandstands. This is reflected in the current Fingal CDP which describes Balbriggan as a "*strongly performing coastal town*", which has benefitted from the growth of the marine sector and can leverage its coastal nature for tourism, manufacturing and retail including restaurants. However, there are no views of the Application Site due to intervening townscape and topography.

10.3.2 RELEVANT PLANNING POLICY – FINGAL COUNTY DEVELOPMENT PLAN (CDP) 2023-2029

10.3.2.1 Land Use Zoning

In the FCDP Sheet No. 4 indicating Balbriggan Zoning Objectives, the Application Site lies within the development boundary and is primarily zoned as "*RA – Residential Area*" with an objective to "*Provide for new residential communities subject to the provision of the necessary social and physical infrastructure*". The CDP also outlines a vision to "*Ensure new residential development is of the highest quality, endorsing the principles of healthy placemaking, enabling life cycle choices and physical, community, recreation and amenity infrastructure are provided in tandem, to create sustainable, healthy, inclusive and resilient communities.*" See Figure 10.2 and 10.3 below.

Figure 10.2: Land Zoning Map – Extract from Fingal County Development Plan Interactive Map Viewer

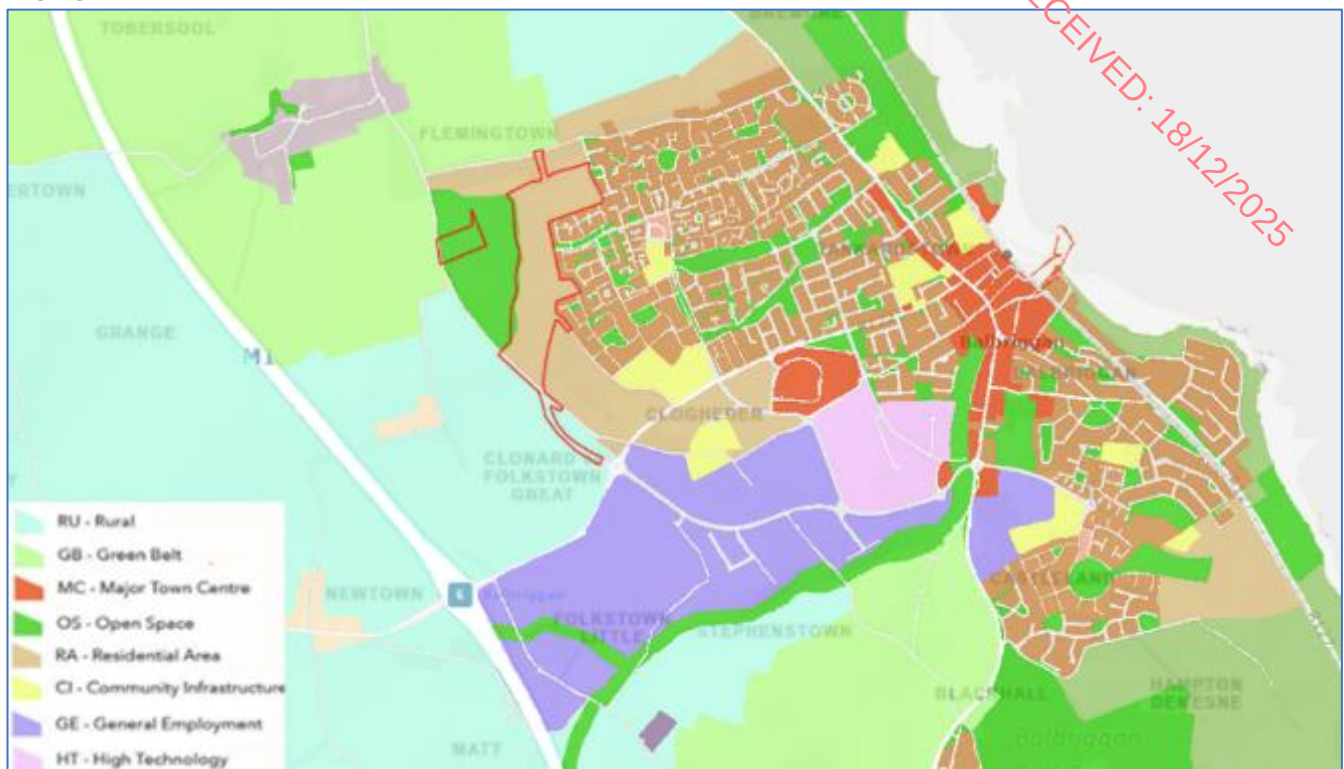
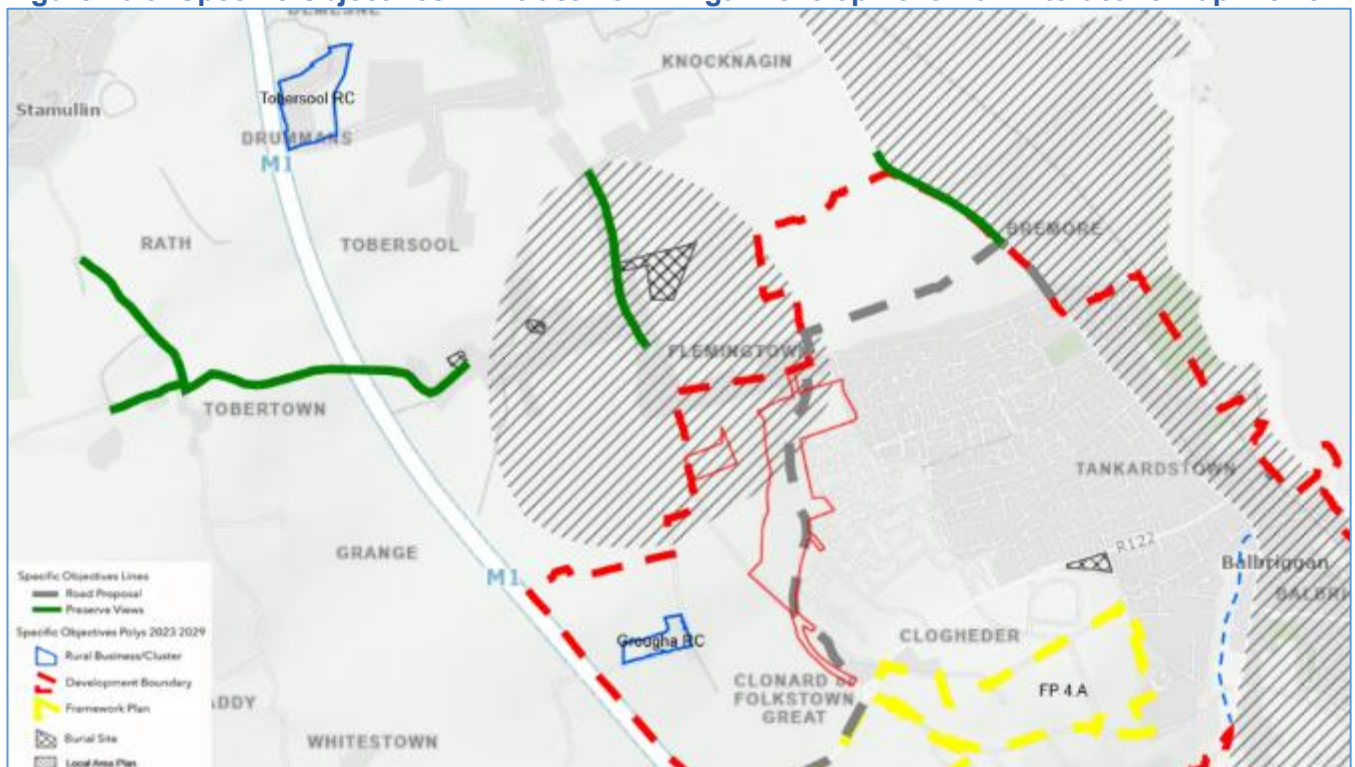


Figure 10.3: Specific Objectives – Extract from Fingal Development Plan Interactive Map Viewer



To the west, the Application Site includes an area zoned “OS - Open Space” with an objective to “Preserve and provide for open space and recreational amenities” alongside a vision to “Provide recreational and amenity resources for urban and rural populations subject to strict development controls. Only community facilities and other recreational uses will be considered and encouraged by the Planning Authority.” The

strategic objectives noted in section 1.4 for Open Space are to *“Protect, enhance and connect areas of natural heritage, green infrastructure and open space for the benefits of quality of life, biodiversity, protected species and habitats, while having the potential to facilitate climate change adaptation and flood risk measures.”*

The Application Site lies outside of the Greenbelt Zone and also outside of the High Amenity Zone located along the fringes of the Irish Coast, 2km to the east.

10.3.2.2 Policy and Objectives of Self-Sustaining Towns

Balbriggan is noted as being the largest of the Self-Sustaining Towns in the Core Area having easy access off the M1 Motorway, being on the main Dublin to Belfast rail line and commuter services to Dublin City. The Fingal CDP notes Balbriggan “.... has developed as a major residential town with a young and expanding population of 20,000, which has more than doubled over the past 20 years” and that “Major infrastructural projects involving upgrades to the water supply, foul drainage and roads infrastructure have been carried out throughout the town and its environs”. It further notes the “... availability of zoned lands for high technology and general industrial development, together with the significant infrastructural and environmental improvements with easy access to major transport corridors, ports, rail and air networks, offer considerable potential for the town.” The Fingal CDP outlines the importance of larger key settlements such as Balbriggan in generating growth and opportunities.

Policies and objectives relating to Self-Sustaining Towns, which are relevant to the site and LVIA considerations are listed below:

- Policy CSP34 – Consolidate Growth of Self-Sustaining Towns;
- Policy CSP36 – Focus Growth Within and Contiguous to Core in Self-Sustaining Towns;
- Policy CSP38 – Malahide, Balbriggan, Lusk, Portmarnock, Rush and Skerries - “Consolidate development and protect the unique identities of the settlements of...Balbriggan...”;
- Objective CSO51 – Support Growth of Self-Sustaining Towns;
- Objective CSO52 – Safe and Convenient Road, Pedestrian and Cycle Systems - “Ensure all Self-Sustaining towns benefit from safe and convenient road, pedestrian and cycle systems which promote permeability, accessibility and connectivity between existing and new developments.”
- Objective CSO55 – Development and Growth of Balbriggan and Skerries;
- Objective CSO56 – ‘Our Balbriggan’ - “Continue to implement, promote and support the ‘Our Balbriggan’ Rejuvenation Plan.” (The Our Balbriggan’ Rejuvenation Plan notes Balbriggan has been one of Ireland’s fastest growing towns with the document focusing on community driven renewal based on relationships between the public, social and commercial economy to create a more resilient sustainable Balbriggan.)

The Objective Vision for Balbriggan within the FDP is to “Consolidate the existing Major Towns in the County, (Blanchardstown, Swords and Balbriggan). The aim is to further develop these centres by densification of appropriate commercial and residential developments ensuring a mix of commercial, recreational, civic, cultural, leisure, residential uses and urban streets, while deliver a quality urban environment which will enhance the quality of life of resident, visitor and workers alike.”

10.3.2.3 Policy on Residential Development and Urban Design

The core policy in terms of residential development is Policy SPQHP35 – Quality of Residential Development as follows:

“Promote a high quality of design and layout in new residential developments at appropriate densities across Fingal, ensuring high-quality living environments for all residents in terms of the standard of individual dwelling units and the overall layout and appearance of developments. Residential developments must accord with the standards set out in the Guidelines for Planning Authorities on

Sustainable Residential Development in Urban Areas, DEHLG 2009 and the accompanying Urban Design Manual – A Best Practice Guide and the Sustainable Urban Housing; Design Standards for New Apartments (DHLGH as updated 2020) and the policies and objectives contained within the Urban Development and Building Heights Guidelines (December 2018). Developments should be consistent with standards outlined in Chapter 14 Development Management Standards.”

Policy and Objectives on Trees, Hedgerows, Green Infrastructure

Policies and objectives in relation to trees, hedgerows and green infrastructure which are considered of relevance are listed below:

- Policy GINHP1 – Resilient Design - “Promote an awareness of the benefits of resilient design and the multi-functional nature of green infrastructure. Apply multi-functional principles of green infrastructure to inform the Development Management process in terms of design and layout of new residential areas, business/industrial development and other significant projects while maximising the multi-functional nature of green infrastructure by ensuring the development of synergies between Public Open Space, Biodiversity, SuDS/Water Sensitive Design, Climate Change and Active Travel objectives.”
- Policy GINHP2 – Protection of Green Infrastructure - “Ensure that areas and networks of green infrastructure are identified, protected, enhanced, managed and created to provide a wide range of environmental, social and economic benefits to communities.”
- Policy GINHP3 – Greening of Developments - “Encourage measures for the ‘greening’ of new developments including the use of green roofs, brown roofs, green walls and water harvesting. Where feasible require new developments to incorporate greening elements such as green roofs, brown roofs, green walls, green car parking and SuDs (e.g. clean water ponds fed by rainwater via downpipes).”
- Policy GINHP21 – Protection of Trees and Hedgerows - “Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management in line with the adopted Forest of Fingal-A Tree Strategy for Fingal.”
- Policy GINHP22 – Tree Planting - “Provide for appropriate protection of trees and hedgerows, recognising their value to our natural heritage, biodiversity and climate action and encourage tree planting in appropriate locations.”
- Objective DMSO125 – Management of Trees and Hedgerows - “Protect, preserve and ensure the effective management of trees and groups of trees and hedgerows.”
- Objective DMSO128 – Demarcation of Townland Boundaries - “Ensure trees, hedgerows and other features which demarcate townland boundaries are preserved and incorporated where appropriate into the design of developments.”
- Objective DMSO126 – Protection of Trees and Hedgerows during Development - “Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with BS5837 2012 Trees in relation to the Design, Demolition and Construction – Recommendations or as may be updated and are monitored by the appointed arboriculture consultant.”
- Objective DMSO127 – Use of Native Species in New Developments - “Require the use of native species where appropriate in new developments in consultation with the Council.”
- Objective DMSO134 – Site Summary of Specimen Removal, Retention and Planting - “Regardless of development size or type, applicants must submit an overall site summary quantifying and detailing the following:
 - tree and hedgerow removal;
 - tree and hedgerow retention; and
 - new tree and hedgerow planting.

This information will be submitted in a digital format agreed with the Council to allow amalgamation and reporting on tree and hedgerow cover within the County over time.”

Objective DMSO140 – Protection of Existing Landscape - *“Protect existing landscape features such as scrub, woodland, large trees, hedgerows, meadows, ponds and wetlands which are of biodiversity or amenity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management.”*

10.3.2.4 Policy and Objectives on Landscape

The policies and objectives relating to landscape, considered relevant, are as follows:

- Policy GINHP25 – Preservation of Landscape Types - “Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning application.”
- Objective GINH055 – Protection of Skylines - “Protect skylines and ridgelines from development.”
- Objective GINH056 – Visual Impact Assessments - “Require any necessary assessments, including visual impact assessments, to be prepared prior to approving development in highly sensitive areas.”
- Objective GINH057 – Development and Landscape - “Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity”.
- Objective GINH059 – Development and Sensitive Areas - “Ensure that new development does not impinge in any significant way on the character, integrity and distinctiveness of highly sensitive areas and does not detract from the scenic value of the area.”

10.3.2.5 Policies and Objectives on Community Infrastructure and Open Space

The Fingal CDP Objective DMS051 notes the requirements for public open space provision. With regards to the setting out and design of open space the FDP includes several objectives related to location, design and layout of open space and amenity provision including play areas or facilities.

10.3.2.6 Policies and Objectives on Views and Prospects

Policies and objectives relating to views and prospects relevant to the LVIA are outlined below:

- Policy GINHP26 – Preservation of Views and Prospects - “Preserve views and prospects and the amenities of places and features of natural beauty or interest including those located within and outside the county”
- Objective GINHO60 – Protection of Views and Prospects - “Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development.”
- Objective GINHO61 – Landscape/Visual Assessment - “Require a Landscape/Visual Assessment to accompany all planning applications for significant proposals that are likely to affect views and prospects.”

The Fingal CDP identifies notable high-quality landscapes within Fingal lie predominantly along the coast, the river valleys and the upland area to the north along the border with County Meath and this is where the majority of designated views and prospects are located. Desk top and site surveys established that none of the identified Views and Prospects are in close proximity to the site or will be impacted by activity or land use changes on the Application Site.

10.3.2.7 Published Landscape Character Assessments

The Fingal CDP includes a Landscape Character Assessment (LCA) that classifies Fingal's landscapes into types / values and sensitivities. The LCA divides the County into six Landscape Character Types, and the Application Site is located within the "Coastal Character Type. See (Figure 10.4).

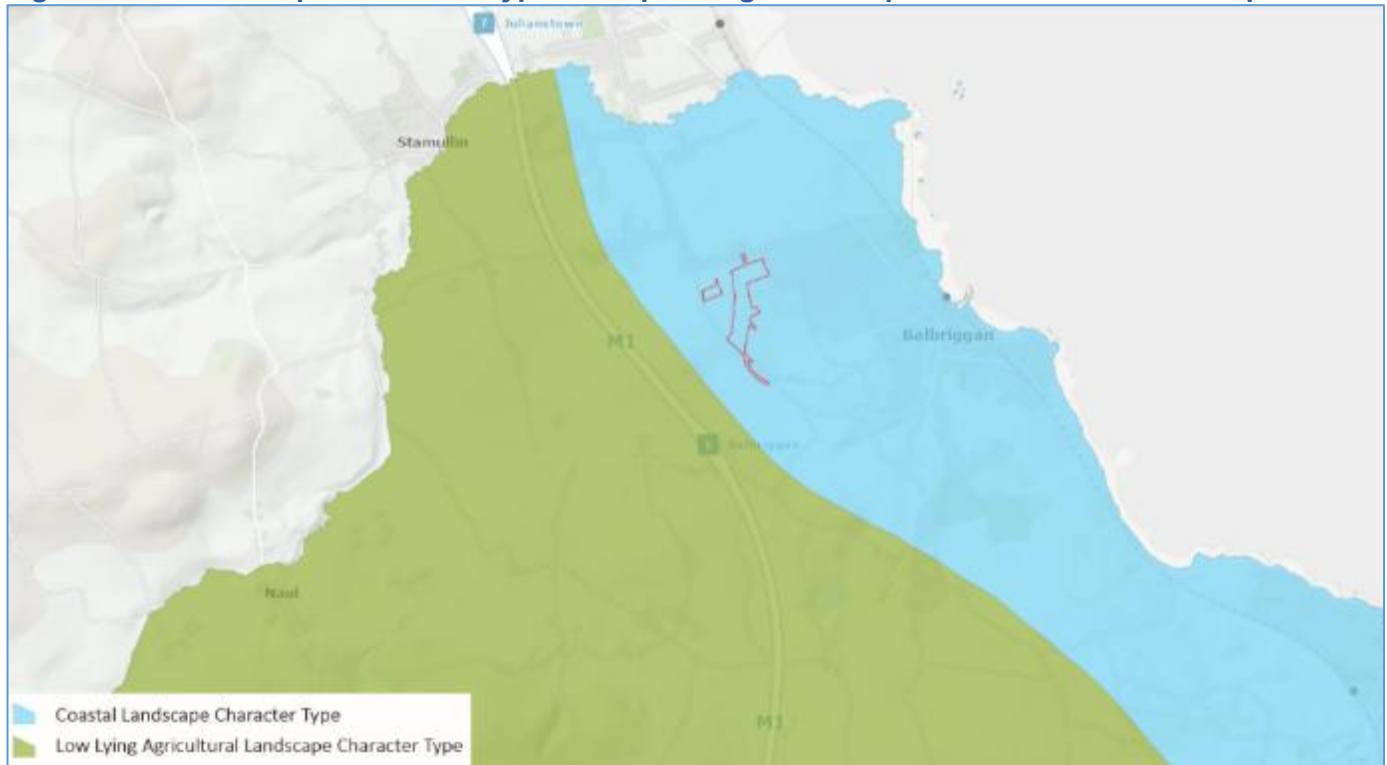
The key characteristics of this area are summarised as follows:

"The Coastal Character Type forms the eastern boundary of the County and contains a number of important beaches, islands and headlands that together create a landscape of high amenity and landscape value. A number of important settlements are located within this area, including Balbriggan, Skerries, Rush, Malahide, Portmarnock and Howth. The land is generally low lying, with the exception of some prominent headlands and hills in the northern part of the area, Howth and the offshore islands. Most of the Howth peninsula is covered by the 1999 Special Amenity Area Order (SAAO).

There are a number of important demesne or estate landscapes containing important woodlands in or adjoining this area at Ardgillan, Hampton, Milverton and Portrane. Horticulture (around Rush), golf courses and individual dwellings are prevalent land uses in the area also. Views along the coast are generally contained within headlands, ridgelines and harbours, creating a number of visual compartments.

The Coastal Character Type is categorised as having an exceptional landscape value. This value is arrived at due to the combination of visual, ecological, recreational and historical attributes. The area has magnificent views out to sea, to the islands and to the Mourne and Wicklow mountains and contains numerous beaches and harbours. The area's importance is highlighted by the High Amenity zoning covering substantial parts of the area. The area is rich in archaeological, architectural and natural heritage and is of high ecological value."

Figure 10.4: Landscape Character Types – as per Fingal Development Plan Interactive Map Viewer



10.3.3 NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE

The National Inventory of Architectural Heritage (NIAH) identifies the following monuments or historic sites on the Application Site.

- A Ritual Site - Holy Well (NIAH DU001-004), an Excavation (NIAH DU001-022001) and a Pit (NIAH DU001-022002) located to the north of the site towards Flemington Lane;
- Near Hastings Court, NIAH have identified a “Field System” (NIAH DU001-023) though this area is largely proposed as part of the open space;
- To the west of Hastings Lawn is an Excavation site (NIAH DU001-026) and an Enclosure (NIAH DU001-033); and
- To the west of Taylor Hill is an Enclosure (NIAH DU001-027).

Beyond the site are other listed enclosures and pits suggesting this area has had a long history of human settlement and activity. Balbriggan town to the east has a large number of NIAH listed buildings that correlates with the historic town core that is a designated Architectural Conservation Area. Further information is provided in **Chapter 14 – Archaeology and Architectural and Cultural Heritage**.

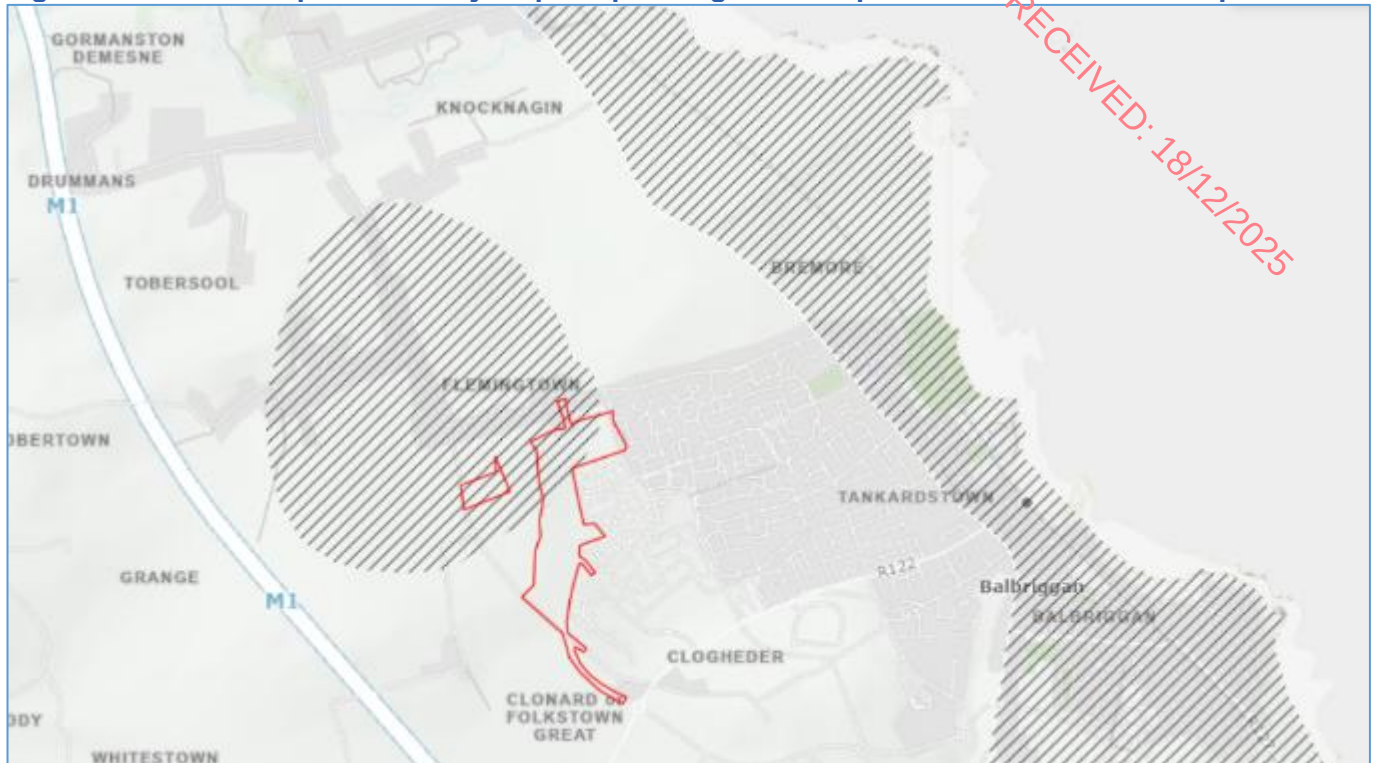
10.3.4 ENVIRONMENTAL PROTECTION AGENCY

Maps available from the Environmental Protection Agency (EPA) indicate no protected landscapes, environment or ecology areas on or close to the Application Site. Further information on ecology is provided in **Chapter 4 – Biodiversity**.

10.3.5 LANDSCAPE SENSITIVITY

Sensitivity is based on the landscape's physical landform shape, scale, pattern, its visual environment/enclosure, any sense of remoteness or tranquillity, presence of man-made features, its skyline, inter-visibility with adjacent sensitive areas and the presence of sensitive or rare features. Landscape sensitivity ultimately is an assessment of the ability of a surrounding landscape or townscape to accommodate and absorb change within the Application Site without affecting its character. It should be borne in mind that it does not necessarily follow that an exceptional value landscape will be highly sensitive to change or similarly a low value landscape will have a low sensitivity to change.

The Fingal Development Plan 2023-2029 evaluates Landscape Sensitivity across Fingal using criteria ranging from high to low. The Coastal Character Type in which the Application Site is located is rated as having ‘high’ sensitivity to development and the Landscape Value of this area is considered as “*Exceptional*”.

Figure 10.5: Landscape Sensitivity Map- as per Fingal Development Plan Interactive Map Viewer

Fingal CDP Section 14.18.4 relates to new development in coastal areas but none of which are relevant on the Application Site. While the Coastal Character Type is categorised as having an exceptional landscape value with high sensitivity, the areas cited in the CDP are those with views out to sea and coastal areas with views to the north and south rather than being focused on the western urban fringe of Balbriggan including the Application Site on residential zoned lands.

The interactive map for the Fingal CDP illustrates the presence of the Balcaddan Architectural Conservation Area to the north of the site, which would be categorised as an area of high landscape sensitivity. However, due to distance and the screening afforded by intervening vegetation and topography, it is not expected to be affected, and therefore would be a factor or consideration in terms of LVIA impacts. Furthermore, it hatches part of the site as “*highly sensitive*” though the core of these sensitive lands are to the north and north-west beyond Flemington Lane. The lands on and aside the Application Site are zoned for residential development in the Development Plan and the proximity to the town and lower landscape sensitivity of these specific lands would have been factored into considerations by Fingal County Council in determining this designation. Taking this and the variable sensitivity into account, the Application Site is assessed as having a Medium rating in terms of landscape character.

In visual amenity terms, the site is rated as having **Low** sensitivity on account of a limited visual envelope due to a combination of the built-up townscape towards Balbriggan and the low rolling topography and accumulation of mature hedgerows in other directions. Longer views are afforded from elevated or exposed areas to the south of the town, but these are of a distant or partial in nature and, in overall terms the Application Site is well concealed from public vantage points. From the majority of areas in west Balbriggan, it would be considered that the site has a good ability to absorb changes without significant detriment to landscape and townscape character or the visual amenity of this area.

10.3.6 LANDSCAPE QUALITY AND VALUE

The Application Site comprises a rural landscape set on the urban periphery, which is largely managed farmland, and, in broad terms, the landscape value and quality would be categorised as **Medium** based on its “everyday” character and undesignated status in landscape or amenity terms. The gently rolling

landscape, while attractive in its own right does not possess many notable features other than hedgerows and (low quality) trees which would not be considered unique or rare in this part of Ireland. The cores of the fields are intensely managed arable lands and there is little in the way of any species or landscape diversity away from hedgerows and ditches that would result in a higher category of value.

Photo 10.7: Existing Landscape Quality and Value – Internal view within Application Site looking south towards the existing urban edge of Balbriggan.



West Balbriggan is characterised by extensive housing estates that have been built out over incrementally the last couple of decades with retail and institutional lands and development aligning the main roads leading from the town centre. Where the urban edge meets the rural landscape, there are often formal and abrupt edges with the adjacent fields being subject to differing management regimes. The developments within the Hastings, Benmore and Taylors Hill estates include properties that back or side onto the Application Site lands and there are variable landscape treatments along the collective boundary which often has resulted in a disjointed and visually poor boundary definition to the rural countryside. However, the Application Site displays no visible signs of anti-social behaviour that are often associated with rural landscapes on town edges.

Photo 10.8: Elevated view from near Clonard Road over Application Site lands and Balbriggan



10.3.7 SELECTION OF VIEWPOINTS FOR VISUAL IMPACT ASSESSMENT

Site surveys were undertaken between March and August 2025 to establish locations where there are potential views of the proposed development or where key visual receptor groups might visit, work or stay and any general movement through the area. Built-up townscape, infrastructure and vegetation are features of the landscape / townscape to the west of Balbriggan and this ensures that views consistently change in context, scale and extent with many views of the Application Site, even from close proximity locations closed off.

Viewpoints were selected within publicly accessible areas based on the following criteria:-

- Reference to those viewpoints used for LVIA for the permitted LRD under planning reg. ref. LRD0006/S3 & ACP Ref: 319343-24;
- Site investigation to establish those locations where there was likely to be significant views (e.g., exposed and elevated landscapes);
- Site investigation to establish those locations where there was likely to be a significant number of visual receptors (e.g., main roads or town areas); and
- Ensuring that key areas in the broader study area are covered to give representative likely visual effect.

Figure 10.5: Viewpoint Location Map

Selected representative viewpoints for the visual assessment are taken from the following locations:-

- Viewpoint 1: Flemington Park;
- Viewpoint 2: Hamlet Lane;
- Viewpoint 3: Taylor Hill Gardens;
- Viewpoint 4: Boulevard Road;
- Viewpoint 5: Clonard Road, Clonard;
- Viewpoint 6: Clonard Road, Flemington;
- Viewpoint 7: Flemington Reservoir, Clonard Road;
- Viewpoint 8: Clonard Boulevard Road (near Bremore ETS School);
- Viewpoint 9: Clonard Road, Clogheder;
- Viewpoint 10: Balbriggan Harbour;
- Viewpoint 11: Balbriggan Martello Tower; and
- Viewpoint 12: R132 Road, Coney Hill.

10.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The development, to be known as Flemington South, will consist of the construction of 815 no. dwellings, provision of the C-Ring Road between Flemington Lane and the Clonard Road roundabout, open space, community floorspace in a 2 storey building, retail floorspace at ground floor of Block F and 2 no. creches on an overall site area of 24.91 hectares comprising 610 no. houses, 194 apartments & 11 no. later living dwellings. The development will also include Class 1 open space in the western portion of the development (2.39 hectares) as well as a series of public open spaces throughout the site comprising 2.87 ha, car parking, cycle parking and all ancillary site development, construction, and landscaping works.

In terms of Open Space and general landscape areas associated with the site, the total area extends to 5.26 hectares which is broken down as follows:-

- Class 1 Open Space: 2.39 hectares which includes lands on the western part of the site on 'OS' zoned lands;
- Public Open Space: 2.87 hectares proposed on 'RA' zoned lands equating to 10%;
- Communal Open Space: 2,383m² associated with apartment blocks and later living units; and
- Residual or Environmental Open Spaces: 5,602m².

These areas are designed to functionally and visually integrate with existing playing fields and adjacent developments, particularly those recently permitted or under construction.

Figure 10.7: Proposed Site Layout



10.5 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

The aim of the LVIA is to objectively and professionally assess how the proposed development will affect the landscape, townscape and visual amenity of this part of Balbriggan. The terminology and glossary used in this chapter to describe landscape and visual effects is based on a review of the Principles and Overview of Processes (Chapter 3) of the GLVIA. The LVIA Criteria and Terminology is outlined in Section 14.2 above.

The magnitude and significance of any effect is determined by the scale and context of the proposed development and any resulting contrast between this and the existing landscape setting and visual amenity. A further consideration is not just its proximity to adjacent townscape or landscape areas but also the number of people who use or pass through this area who may feel that the visual and townscape / landscape quality of the area has been affected by this proposal.

Of relevance to the overall considerations on landscape and visual impacts, is that planning permission was granted in July 2024 for a Large Scale Residential Development across the majority of this Application Site comprising 564 no. dwelling units, consisting of 378 no. houses, 84 no. duplex units, 26 no. three-bedroom duplexes and 102 no. apartments (Planning Reference LRD0006/S3).

The An Bord Pleanála Inspector's Report ABP-319343-24 (June 2024) reviewed the landscape and visual considerations related to this proposal on the way to a recommendation and noted that the "... proposed development would undoubtedly have an impact on the landscape and visual amenity in the vicinity of the site given the change in land use from agricultural use to a substantial residential development/extension of the town" and that the "... residential development, open space, and part of a road is consistent with the zoning objective of the site and with the existing and permitted pattern of development in the area". The report concluded the "...proposed development would not have any unacceptable direct, indirect, or cumulative landscape or visual impacts".

Further information regarding the planning history is provided in the Planning Report by John Spain Associates.

10.5.1 CONSTRUCTION PHASE

The nature of groundworks, construction activity, road building and associated infrastructure will mean that the core of the Application Site will be subject to major alteration on account of re-grading and profiling works. The elements that will have landscape and visual impacts are as follows:

- Fixed construction plant, including cranes and scaffolding and gantries;
- Earthworks and ground profiling;
- Removal of 34 no. trees and internal field boundaries and hedgerows (1,639 linear meters);
- Underground services installation and drainage including SUDs;
- Extending, replacement and repair of boundary fencing;
- Mobile construction plant, such as excavators and lorries;
- Storage and compound areas;
- Erection of welfare facilities and erection of protective hoardings;
- Security and safety lighting; and
- The presence of an evolving development.
-

There is likely to be **Temporary Moderate Adverse** effects during the initial construction period with the new access and hedgerow removal to facilitate key access points from Flemington Lane and the adjacent residential areas initially being the most evident change in public perception terms. There would be an associated increase in traffic associated with construction and materials delivery off Flemington Lane, Hamlet Lane and Taylor Lane Boulevard comparative to the existing situation.

The nature of groundworks, construction activity, house building and associated infrastructure will mean that the Application Site will be subject to a **Major** alteration rated as **Significant** on account of re-grading and profiling works for a temporary period. While effects will be lessened due to distance, intervening vegetation, built form and topography across neighbouring housing estates, those areas and properties abutting the Application Site lands will experience **Slight to Moderate Adverse** effects during this temporary period.

Due to the short-term nature of the construction period and limited visual envelope, the LVIA assesses that these impacts will be acceptable with mitigation measures set in place. This will include hoarding and fences that will assist in limiting views from public amenity / open space areas while retained vegetation, peripheral built form, and topography ensure any effects during this time to the broader Balbriggan area will not be of a significant nature.

10.5.2 OPERATIONAL PHASE – LANDSCAPE CHARACTER EFFECTS

The landscape and visual effects deriving from this proposed development are deemed to be **Permanent** changes (i.e. effects lasting over twenty-five years and irreversible) related to a proposed residential development, neighbourhood centre and associated works as summarised in 10.4 above.

10.5.2.1 Application Site

The proposal will result in permanent changes to the landscape character of the Application Site due to change from open fields of farmland and loss of hedgerows. This will be replaced by a built townscape character across this part of the site designated “*RA – Residential Area*” lands including buildings, landform changes and boundary treatments that will essentially change its context to a residential and urbanised area comprising 815 no. dwelling units (equating to a density of 47 dwellings per hectare).

Boundary and internal trees and hedgerows are to be retained where feasible there is a requirement for felling sections to facilitate access to the site and general residential layout. The most notable removal will be a 280m section along Clonard Road to the south-west of the site of which approximately is to allow for the C-Ring Road. The generally low profile of the internal hedgerows being removed ensures their consequence in landscape terms is not significant. Peripheral hedgerows and wooded belts will be augmented and retained ensuring that they contribute to visual screening and buffers. The loss of any trees and hedgerows should be considered in relation to the proposed landscape works to open spaces and across the central core of the site that will, as it matures, redress and significantly increase the extent of trees and vegetation on the site.

The removal of 34 no. trees and 1639m of internal hedgerows will have slight adverse effects but their condition is not rated as high in aesthetic or condition terms, and they have not been subject to any management for some time and the Tree Survey noted long sections were swamped by brier. The design sought to retain as much hedgerow as possible, and it is relevant that the consented planning application on this site would have entailed removal of nearly all the internal hedges. As part of this proposal, the environmental open spaces allow for hedgerow augmentation and a herb layer set to either side of the retained hedgerows (which extend to 907 linear metres). The proposed development also includes for over 2.068km of new hedgerows and 466 no. extra heavy and semi-mature trees which would outweigh any vegetation loss and ensure green corridors are retained across the site.

The collective development will have **Major** effects to the character and sense of place across the site. However, the significance of effect is reduced or muted due to the majority of the site is not one that would be considered a pristine landscape or one of a very sensitive nature (as noted in the Development Plan and hence its “*RA – Residential Area*” designation) due to current land-use and its location on the urban / rural interface.

Further the landscape effects would not necessarily be one of an adverse nature on account of the significant landscape and public open space and landscape development with these areas equating to 5.26 hectares (over 20%) of the Application Site. While this total includes 0.56 hectares of residual or environmental lands, the key public open spaces made up of new parks, play areas, amenity areas and Class One lands would contribute significantly to the local landscape character.

Visualisation 10.1: Proposed Development (courtesy of 3DDB)



10.5.2.2 Flemington Lane

For road users and residents of Flemington Lane on the 750m section between Flemington Park (housing estate) and the Flemington Road junction to the west, there would be a conscious feeling the urbanised form has shifted west beyond the current town edge and areas perceived as open landscape or farmland have become part of the Balbriggan townscape. The new site entrance off Flemington Lane will be a readily discernible change with **Major** effects on a short section (approximately 150m) of the road due to removal of existing hedgerow and the evident new townscape serviced by the new internal C-Ring access road. The proposed houses (and creche) associated are set back over 100m from Flemington Lane but will have **Slight Adverse** effects on the general townscape character. Existing roadside hedgerows and garden vegetation in the intervening landscape would limit views of the proposed development from the majority of this area and road. Tree and hedgerow planting / augmentation would have positive effects on the character of this section of the road by the medium term offsetting any perceived adverse effects deriving from the change from farmland to urban development. See Viewpoint 1.

10.5.2.3 Clonard Road

Clonard Road would be subject to notable changes on account of the new C-Ring Road linking into the existing roundabout, and proximity of the proposed development to its north and east side. The existing hedgerow on its eastern side will be removed opening up views which would ultimately be of apartment block (H) and five sets of terraced houses facing the road (over c. 150m) which would result in **Major** landscape effects due to changing the view from field to townscape. The change would enclose the view towards Balbriggan (though this is currently restricted by the hedgerow) and introduce increased activity, lighting, and traffic to this area comparative to the existing situation equating to a **Moderate Adverse** effect. Beyond this short section, effects would quickly dissipate to **Slight Adverse / Neutral** on account of the existing landscape setting (screening topography and vegetation) but there would be a conscious feeling the urbanised form of Balbriggan has shifted west. See Viewpoint 5 and 6.

The raised elevation of part of the Clonard Road allows partial views over the site and passing traffic would note the extension of the town and change from field to housing estates. It would be more appreciable from closer lands such as where the Balbriggan Water Supply Scheme and Reservoir is located but this is not publicly accessible land. See Viewpoint 7.

Visualisation 10.2: Proposed Development (Courtesy of 3DDB)



10.5.2.4 Balbriggan

Residential properties close to the site boundary within the Flemington Park, the Hastings and at Taylors Hill developments to the east will experience **Slight Adverse** effects in terms of sense of place as the context of the site and landscape to the west changes from fields to urban townscape. Effects to the internal areas within these estates to the east are lessened due to intervening vegetation and built elements with these areas already heavily urbanised in character and judged as **Slight Neutral**. The associated open spaces within this proposal are aligned to link in with or connect to existing open spaces and parkland linkages within the existing estates.

Residential properties closer to the site will experience **Slight** effects in terms of sense of place as the context of the site and backdrop views to the west will include new built environment on the rising lands to the west towards Clonard Road and Flemington Lane. Retained trees would serve to mute the effects in terms of general character impacts to many parts of the estate such as Flemington Park. Any significance and magnitude of effects will reduce over time as the extensive landscape measures mature. The retention and augmentation of existing boundary vegetation along with incorporated green space, native planting, and sustainable drainage systems (SuDS) would have localised positive effects in terms of landscape treatments and biodiversity.

Beyond those areas in close proximity to the site, there would be a conscious feeling across west Balbriggan that the urbanised form has shifted south and west beyond the current town edge with areas perceived as open landscape or farmland becoming part of the broader townscape. Across the majority of town – including all coastal areas –, the effects will be **Negligible** due to intervening townscape, topography and vegetation which will visually obscure the development extent. The entrances and road connections to the existing road network at Flemington Lane and Clonard Road – as noted above - will be the most appreciable or readily discernible changes.

The proposed development will be largely obscured from the local road network (including the R122 and R132 Road to the south and east of Balbriggan respectively) due to the relatively low profile of the development when set into this receiving landscape type along with the accumulation of hedgerows but there will be a conscious feeling or sense that Balbriggan has extended. In landscape and visual terms, this would not be rated as a significant change beyond the actual site, and any significance or magnitude of effect will reduce over time as the proposed landscape works within the site matures. Effects on the landscape character of the general Balbriggan area are assessed as **Slight Adverse**.

In terms of the centre of Balbriggan or any parts of its harbour, the beach or historic core (and any of the associated National Inventory of Architectural Heritage sites) there will be **Negligible Neutral** effects. The proposal would have no bearing on any views or townscape character, and it would not result in any lessening of appreciation or enjoyment of its key features, designated or quality areas including Bremore Castle.

This proposal will introduce a large scale residential and neighbourhood development onto the town's western periphery on land that has been historically farmland. Any effects should be measured in context with the adjacent townscape and the Development Plan zoning that ensure this will appear, in landscape and visual terms, as a logical and appropriate location for this type of development. Further the lands in question would not be categorised as highly sensitive or of a quality that renders a higher rating in terms of the significance or magnitude of landscape effects. See Viewpoints 2, 3, 4 and 8 to 12.

10.5.2.5 LCA Coastal Character Type

There will be negligible effects on the landscape or character to the vast majority of this LCA due to topography, vegetation and built environment. The proposed development would not change the actual character of the LCA apart from areas near and aside the Application Site as assessed above which are already impacted by townscape form and urbanising influences. There will be a generally **Slight** effect in areas within west Balbriggan with the extension of the urban form of the town being discernible, but this would not be something that would be readily appreciable or have a significant effect on any broader appreciation of landscape, setting or context. Effects are rated as **Neutral**.

The proposal will have a **Negligible** and **Neutral** effect on the sense of place and would not result in any lessening of appreciation or enjoyment of the more visited or notable coastal or estate / demesne landscapes in the LCA areas. Any effects should be measured in context with the adjacent townscape and the Area Plan zoning ensuring this will appear as a logical and appropriate location in landscape (and visual) terms for this type of development.

Table 10.8: Landscape Effects Summary

Area	Sensitivity	Summary of Landscape Effects	Magnitude	Significance	Significant (Yes / No)
Application Site	Medium	Loss of vegetation and change of baseline setting from predominantly open fields to townscape and associated open space.	Major	Slight Adverse	Major Significant
Flemington Lane	Medium	Changes to local sense of place with additional townscape	Slight / Moderate	Slight Adverse	Medium Not Significant
Clonard Road	Medium	Loss of roadside hedgerow and change of baseline setting from predominantly open fields to townscape and associated open space.	Major	Slight Adverse	Major Significant

Area	Sensitivity	Summary of Landscape Effects	Magnitude	Significance	Significant (Yes / No)
West Balbriggan	Medium	Changes to local sense of place but development mostly screened from these areas	Slight / Moderate	Slight Adverse	Medium Not Significant
Balbriggan	Medium / High	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible Not Significant
LCA Coastal Character Type	Medium / High	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible Not Significant

10.5.2.6 Residential Amenity

Potential effects on residential amenity are generally considered a planning matter and should be judged collectively and not just by Landscape Architects. As noted within “*Residential Visual Amenity Assessment*” *Technical Guidance Note 2/19* (RVAA):

“The threshold at which a residential property’s visual amenity becomes an issue of Residential Amenity has sometimes been described as the point when ‘the effect(s) of the development on the ‘private interest’ is so great that it becomes a matter of ‘public interest’”. The planning system is only concerned with public interest.” (Reference: RVAA Section 5.2)

There is a vacant dwelling and an agricultural structure to be demolished in the northern part of the Application Site. The nearest residential areas are in the housing estates that abut the east of the site in generally uneven and random alignment between Flemington Lane to the north and near Clonard Road to the south as well as previous phases of development in Taylors Hill. In terms of the RVAA, none of these properties have any “*public interest*” or uses directly associated with the landscape character or visual amenity of this area.

Within the estates, the majority of properties are internally focused and only the very peripheral dwellings would have vantage in the direction of the Application Site. The proposal will result in **Negligible** changes to the internal character of these areas, but they will no longer be seen as the outskirts of the town with the landscape to the south and east being integrated into townscape which will affect the wider “*sense of place*”. Beyond this, any effects on character reduce appreciably due to an accumulation of vegetation and built environment as well as the fact these parts of Balbriggan already have an urbanised character.

10.5.3 VISUAL EFFECTS – OPERATIONAL PHASE

The following tables summarise the views and context of the 12 no. representative viewpoints and the likely impact on the views and visual quality deriving from the proposed development. They include wireframes and photomontages presented at a larger scale from these viewpoints, but the following include extracts of these photomontages (prepared by 3DDB) and annotated site photos from other selected views for ease of reference.

Table 10.9: Viewpoint 1 Flemington Park

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Flemington Park (Public Open Space)	Distance to Application Site	50m
Viewpoint Baseline	Flemington Park is a residential housing estate comprising 37 detached and semi-detached homes located to the north-east of the Application Site and accessed off Flemington Lane. It sits on the western edge of Balbriggan with areas of open space, to its west, merging into the open fields and landscape that rises gently towards Clonard Road further west. Part of the site is visible behind and through a gappy hedgerow through which distant views are afforded of the Balbriggan Water Supply Scheme and Reservoir on the skyline. The majority of visual receptors will be local residents and users of the associated open spaces.		
Viewpoint Sensitivity	Medium		
Predicted Change	The northern part of the proposed development will be a discernible change to view to the west altering it to include the upper portions and gables of new houses set over, partially behind (i.e. filtered) and set between the trees and hedgerows aligning the western edge of the open space. The low profile of the proposed properties and distance ensures that, while evident, it would not be overwhelming or significant in terms of visual amenity and view context. The key change will be the sense that townscape has extended and that this area of open space is no longer the edge of the town and is now bound by residential areas. Moderate effects will be experienced though this would be more due to a sense of place than actual view due to the extent of retained vegetation and existing nature of the landscape in this area.		
Significance Summary	Moderate Neutral: A partial view of the proposal appearing as a noticeable feature in the middle ground but have no significant effect on its visual quality or context.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

Table 10.10: Viewpoint 2 – Hamlet Lane

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Hamlet Lane, Balbriggan	Distance to Application Site	110m
Viewpoint Baseline	Hamlet Lane is a housing estate located to the west of the Chieftain's Way area in west Balbriggan. The estate includes a series of two-storey terraced houses that overlook a linear open space aligned east to west affording partial views of the Application Site which is on slightly elevated lands. Evident across the site is a completed road providing access to the sports pitch and open space to the west of the site and towards Flemington Road / Clonard Road. The majority of the Application Site to the north and south is obscured by intervening buildings within the Hamlet Lane, Hastings and Bremore areas. The majority of visual receptors will be local residents and users of the associated open spaces.		
Viewpoint Sensitivity	Medium		
Predicted Change	Part of the proposed development will be evident and a discernible change to views to the west altering it to include sizeable apartment blocks set over newly landscaped areas and tree-lined avenues. Their relatively close proximity will result in changes to the visual context and skyline when viewed from this open space though it would not be something of an overwhelming nature or significant in terms of visual amenity given the existing view context and limited extent of view of the actual development. The key change will be the sense that townscape has extended and that the Hastings and Bremore areas are no longer the edge of the town having Moderate effects.		
Significance Summary	Moderate Neutral: A partial view of the proposal appearing as a noticeable feature in the middle ground but have no significant effect on its visual quality or context.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

Table 10.11: Viewpoint 3 - Taylors Hill Gardens

			
Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Hastings Green	Distance to Application Site	75m
Viewpoint Baseline	Hastings Green is a housing estate located to the west of the Chieftain's Way area in west Balbriggan. The estate includes a series of two-storey terraced houses that overlook a linear open space aligned east to west affording partial views of the Application Site at a c. 30m gap between buildings set on slightly elevated lands. The majority of the Application Site to the north and south is obscured by intervening buildings within the Hastings and Bremore areas. The majority of visual receptors will be local residents and users of the associated open spaces.		
Viewpoint Sensitivity	Medium		
Predicted Change	Part of the proposed development will be evident and a discernible change to views to the west altering it to include sizeable apartment blocks set over newly landscaped areas and tree-lined avenues. Their relatively close proximity will result in changes to the visual context and skyline when viewed from this open space though it would not be something of an overwhelming nature or significant in terms of visual amenity given the existing view context and limited extent of view of the actual development. The key change will be the sense that townscape has extended and that the Hastings and Bremore areas are no longer the edge of the town having Moderate effects.		
Significance Summary	Moderate Neutral: A partial view of the proposal appearing as a noticeable feature in the middle ground but have no significant effect on its visual quality or context.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

Table 10.12: Viewpoint 4 – Boulevard Road

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Taylor's Hill Boulevard	Distance to Application Site	>25m
Viewpoint Baseline	Taylor's Hill Boulevard is part of a wider housing estate located to the south-west / west of the broader Chieftain's Way area in west Balbriggan. The development comprises a series of semi-detached and terraced houses with the timber fence to the west of the Boulevard defining the current western edge of the Balbriggan townscape. The area beyond the fence has been restored to a field for a temporary period and is, ultimately, to be built out as part of the Ladywell housing development. Views are afforded over the fence towards the southern part of the Application Site that is set on slightly raised lands towards Clonard Road to the north-west with the skyline to this low-lying landscape defined by a field hedgerow. The majority of visual receptors will be local residents.		
Viewpoint Sensitivity	Medium		
Predicted Change	The southern part of the proposed development will be a notable change to the skyline to the north-west with it changing to that of an urbanised landscape comprising apartment blocks and rows of residential housing. The evident change should be judged in combination with the adjacent proposal for the Ladywell housing scheme, that if built out, would render views of this proposal as being of negligible consequence. In isolation, this proposal would have Moderate effects on the nature of the view from the Boulevard due to close proximity and extent of development visible. The intervening (current) field allows for some distance between this viewpoint and the development and ensures that its introduction to the view would not be of an overwhelming or significant nature.		
Significance Summary	Moderate Neutral: The proposal will be a noticeable feature in the middle ground but have no significant effect on its visual quality or context.		
Cumulative Assessment	The proposed development will be seen in conjunction with the Ladywell residential development to the south which would, on completion, partially screen this proposal. The collective effects are rated as Moderate.		

Table 10.13: Viewpoint 5 – Clonard Road, Clonard

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Clonard Road (near proposed C-Ring junction, Clonard)	Distance to Application Site	>0m
Viewpoint Baseline	Clonard Road is the closest road to the west of the Application Site and provides a link between the R122 Road to the south and, via Flemington Road, Gormanstown to the north. It is set between hedgerows for much of its route near the Application Site that limit views to the east in the direction of the site and Balbriggan. This viewpoint is taken from a gateway adjacent to the proposed site entrance road where a broader gap in the roadside hedgerow will be created to provide for the new road and appropriate sightlines. The existing view is of an open field with partial views of roofs of properties at Taylors Hill Boulevard visible on the skyline. The broader townscape of Balbriggan is obscured. The visual receptors will be road users for which this would be an oblique view and there is little reason to stop at this location or to look in this direction.		
Viewpoint Sensitivity	Medium		
Predicted Change	The south-west portion of the proposed development will have Major effects on this view due to proximity of the new C-Ring road and apartment blocks (approximately 75m distant). The view includes part of a new residential development and this would be seen as an extension of this across an open field area to its north. The set back allows for landscape works including new paths, tree planting and hedgerow augmentation that would contribute to local amenity and reduce the significance of impact but the broader context of view will change from rural to urban. The nature of effect is also reduced on account of the existing buildings visible and limited value of the baseline view.		
Significance Summary	Substantial Neutral: The proposal will be a major change to the view appearing as the dominant feature appearing in the foreground.		
Cumulative Assessment	The proposed development will be seen in conjunction with the adjacent Taylors Hill residential development (under construction) to the south. The collective effects are rated as Substantial .		

Table 10.14: Viewpoint 6 – Clonard Road, Flemington

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Clonard Road, Flemington	Distance to Application Site	>0m
Viewpoint Baseline	Clonard Road is the closest road to the west of the Application Site and provides a link between the R122 Road to the south and, via Flemington Road, Gormanstown to the north. It is set between hedgerows for much of its route near the Application Site limiting views to the east over the adjacent fields. This viewpoint is taken from a section of the road where the low hedge (dominated by brier) allows partial views across fields towards the site are though the majority of it and Balbriggan are obscured by both the hedge and topography. The majority of visual receptors will be road users for which this would be an oblique view. There is little reason to stop at this location or to look in the site direction and viewers would inevitably be passing at speed.		
Viewpoint Sensitivity	Medium		
Predicted Change	The proposed development will be an evident introduction on account of removal of part of the brier hedgerow on the east side of the road to facilitate vehicle sightlines that opens up views towards the south-west part of the residential development comprising low-rise terraced housing. The houses are set back across an area of landscaped open space that would include tree and hedgerow planting as well as paths that would contribute to local amenity. The introduction of houses would signal a visual baseline change from predominantly rural to having an urban context which would have Moderate effects.		
Significance Summary	Moderate Neutral: The proposal will be a noticeable feature set on part of the skyline to the east but have no significant effect on its visual quality or context.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

Table 10.15: Viewpoint 7 - Flemington Reservoir, Clonard Road

			
Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Flemington Reservoir	Distance to Application Site	120m
Viewpoint Baseline	The Flemington WSS and reservoir are located within a former field area set to the east of Clonard Road and west of the core of the Application Site. The engineering requirement for the facility allows for a raised elevation offering an open view over the broader Balbriggan townscape and towards the Irish Sea beyond. The Application Site is set out as fields / farmland leading towards the current town edge in the general Chieftains Way area. This is essentially a private view on WSS lands and not strictly publicly accessible but is representative of potential views from this area though such views are not afforded from the adjacent northern section of Clonard Road due to roadside hedgerows.		
Viewpoint Sensitivity	Medium		
Predicted Change	Due to close proximity, the proposed development will be a notable addition to the west of Balbriggan extending the residential housing and townscape areas towards this viewpoint location and having Moderate effects on the view. It does not reduce the extent of sea visible in the view or impede views that would be considered sensitive or notable. In visual terms, the limited number and type of viewers is factor in reducing the significance of visual impact on this area, but it will result in a notable and visible extension of Balbriggan.		
Significance Summary	Moderate Neutral: The proposal will be a noticeable feature bringing townscape closer to this area but have no significant effect on its visual quality or context.		
Cumulative Assessment	The proposed development will be seen in conjunction with the adjacent Ladywell residential development to the south. The collective effects are rated as Moderate .		

Table 10.16: Viewpoint 8 - Clonard Boulevard Road (near Bremore ETS School)

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Turning head at Clonard Boulevard Road (near the Bremore ETS School)	Distance to Application Site	775m
Viewpoint Baseline	This viewpoint is from the turning head at the end of Clonard Boulevard Road near the Bremore ETS where the elevation in land towards Clogheder that allow open views through a security fence over the wider town of Balbriggan. The view includes the extensive buildings at Coláiste Ghlór na Mara and the broader expanse of the collective residential developments in the Chieftain's Way area. The Application Site is partially visible on the rising lands towards Clonard Road and Flemington Lane though it is hard to discern its full extent due to intervening housing estates. The majority of visual receptors will be students, teachers and those in the area for reasons related to the Bremore ETS.		
Viewpoint Sensitivity	Medium		
Predicted Change	The proposed development will be a notable addition to the west of Balbriggan extending the residential housing and townscape areas and sitting partially on the low skyline having Moderate effects on this view. The proposal would not bring townscape any closer to this viewpoint or widen the extent of townscape visible in panoramic terms on the basis it is set behind and links into the intervening housing areas within the general Chieftain's Way area. In visual terms, the distance and intervening townscape is a factor in reducing the significance of visual impact on this area, but it will result in a notable and visible extension of Balbriggan.		
Significance Summary	Moderate Neutral: The proposal will be a noticeable feature set on part of the skyline to the north-west but have no significant effect on its visual quality or context.		
Cumulative Assessment	The proposed development will be seen in conjunction with the Ladywell and Folkstown residential developments to the south. The collective effects are rated as Moderate .		

Table 10.17: Viewpoint 9 - Clonard Road, Clogheder

			
Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	Clonard Road, Clogheder	Distance to Application Site	990m
Viewpoint Baseline	Clonard Road is a link road providing access between the R122 Road and the Clonard Hill area and south Balbriggan area. Adjacent to this viewpoint is the entrance to the Millfield Shopping Centre. For those travelling north, the road has a slightly elevated corridor that allows open views over west Balbriggan. The view includes the extensive buildings at Coláiste Ghlór na Mara and the broader expanse of the collective residential developments in the Chieftain's Way area. The Application Site is partially visible on the rising lands towards Clonard Road and Flemington Lane though it is hard to discern its full extent due to intervening housing estates. The majority of visual receptors will be road users including those accessing the nearby Bremore ETS and those shopping /visiting the Millfield Shopping Centre.		
Viewpoint Sensitivity	Medium		
Predicted Change	The proposed development will be a notable addition to the west of Balbriggan extending the residential housing and townscape areas and sitting partially on the low skyline having Moderate effects on this view. The proposal would not bring townscape any closer to this viewpoint or widen the extent of townscape visible in panoramic terms on the basis it is set behind and links into the intervening housing areas within the general Chieftain's Way area. In visual terms, the distance and intervening townscape is a factor in reducing the significance of visual impact on this area, but it will result in a notable and visible extension of Balbriggan.		
Significance Summary	Moderate Neutral: The proposal will be a noticeable feature set on part of the skyline to the north-west but have no significant effect on its visual quality or context.		
Cumulative Assessment	The proposed development will be seen in conjunction with the Ladywell and Folkstown residential developments to the south. The collective effects are rated as Moderate .		

Table 10.18: Viewpoint 10 – Balbriggan Harbour



Winter view wireline courtesy of 3DDB (2025)

Viewpoint Location	Balbriggan Harbour Pier	Distance to Application Site	2km
Viewpoint Baseline	Balbriggan Harbour is a small fishing port located on the coast to the east of Balbriggan and the Application Site. It includes a quay wall and a lighthouse and serves to provide a base for both commercial vessels and recreational boats. It overlooks Balbriggan Beach across a small tidal bay beyond which is a railway line and built environment associated with the town including Loreto Convent and School The majority of visual receptors will be those who are at the harbour for work purposes or recreation.		
Viewpoint Sensitivity	Medium/ High		
Predicted Change	The proposed development will be obscured by the intervening townscape of Balbriggan and Negligible visual impacts are predicted.		
Significance Summary	Negligible: proposal will not be visible equating to a no-change situation.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

Table 10.19: Viewpoint 11 – Balbriggan Martello Tower

 Winter view wireline courtesy of 3DDB (2025)			
Viewpoint Location	Martello Tower on shoreline next to Balbriggan Football Club grounds	Distance to Application Site	2km
Viewpoint Baseline	Balbriggan Martello Tower is one of the series of coastal defensive towers built around Ireland during the early 19th century, primarily between 1804 and 1806. It stands on a small rocky headland known as The Head, overlooking Balbriggan Harbour and the Irish Sea. Inland it looks across pitches and lands associated with Balbriggan Football Club that lead towards a belt of trees that define the line of the railway line, approximately 175m distant. The townscape of the wider town beyond the railway line including the nearest areas at Lambreecher are largely obscured due to the low lying topography and extent of vegetation. The majority of visual receptors will be those who are in this area of walking, amenity, sporting purposes or recreation.		
Viewpoint Sensitivity	Medium/ High		
Predicted Change	The proposed development will be obscured by the intervening townscape of Balbriggan and Negligible visual impacts are predicted.		
Significance Summary	Negligible: proposal will not be visible equating to a no-change situation.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

Table 10.20: Viewpoint 12 – R132 Road, Coney Hill.

 Winter view photomontage courtesy of 3DDB (2025)			
Viewpoint Location	R132 Road, Coney Hill	Distance to Application Site	950m
Viewpoint Baseline	The R32 Road leads north out of Balbriggan and is part of a longer road traversing the rural landscape near the coastline towards Drogheda approximately 14km distant. The road is generally aligned by hedgerows or earth banks that limit views over the adjacent fields. This viewpoint is selected from a location where a gap at a field gate allows views over the low-lying landscape in the direction of the Application Site though this is obscured by an accumulation of hedgerows across the intervening fields. The visual receptors will be road users for which this would be an oblique view and there is little reason to stop at this location or to look in this direction.		
Viewpoint Sensitivity	Medium		
Predicted Change	The proposed residential development, approximately 1km distant at the closest point will be an evident addition to the skyline in the landscape to the west of Balbriggan and introduce buildings into a view that is currently predominantly rural countryside. The key characteristic of countryside will be retained, and it would not have a significant bearing on the quality or value of this glimpse and oblique view given the distance and nature of intervening landscape. Effects are assessed as being Slight with the key visual factor being that Balbriggan town is now more visible in this distant view.		
Significance Summary	Minor Neutral: proposed development will form a minor component in the view but would not have a significant effect on its overall quality.		
Cumulative Assessment	Negligible: No views of any other proposed developments		

10.6 'WORST CASE' SCENARIO

10.6.1 CONSTRUCTION PHASE

The above Construction Stage assessment is based on a worst-case scenario.

10.6.2 OPERATIONAL PHASE

The visual effects are assessed on the basis of and photography undertaken for the photomontages / visualisations on clear days over Summer and Autumn 2025 in good lighting conditions. Visual effects can invariably change due to cloud, rainfall, dusk and sun angle that would lead to differences in clarity, colour and contrast. It is therefore reasonable to assume there would be reduced visibility in these scenarios particularly in mid to long distance views. Consequently, the assessment of effects is based on the worst-case scenario where the proposed development would be most visible and based primarily on photomontages prepared using a winter situation.

There is a case that in winter, with less foliage on intervening trees and vegetation, views are likely to be more open but investigations on this site suggests this would not have any significant bearing on the impact assessment due to the low-lying nature of the landscape in the Balbriggan area and the thickness of boundary vegetation and location of key viewpoints. It is notable that in winter months the sun is generally lower, reducing contrast and therefore potentially reducing visual impact further.

10.7 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

10.7.1 INCORPORATED DESIGN MITIGATION

The proposed development has been designed to take account of the relevant planning designations on this site and is in accordance with the requirements of the Fingal Development Plan (FDP) 2023-2029. The zoning and policy objectives informed the arrangement of the residential layout and core open space including concentrating residential development in the "RA – Residential Area" zoned lands to the east of the site.

Visualisation 10.3: Proposed Development (Courtesy of 3DDB)



As part of the design process, existing environmental and technical constraints and assets were reviewed with the design team and the landscape design considerations focused on provision of public realm areas,

open spaces, playgrounds, and linkages / connectivity within the proposed development site that would be accessible to all members of the community. The objectives include creation of different landscape treatments including avenue tree types and building types to create identifiable character zones.

Visualisation 10.4: Proposed Development (Courtesy of 3DDB)



In terms of Green Infrastructure and Connectivity, the following elements are designed into the proposed development:

- The main vehicular, cyclist and pedestrian access will be a core C-Ring road linking Flemington Lane to the north and Clonard Road to the south-west with associated cyclist and pedestrian links;
- The main access road through the site, is designed to provide a strong “green” boulevard character aligned with incidental open space including avenue trees, landscape areas, broad walking routes and cycleways. Off this is a hierarchy of roads and interconnected streets to enable residents, users and visitors to move in a sustainable manner (as alternative options to vehicle trips) to the childcare facility and towards Flemington Park to the north;
- Link paths across the site will provide a safe environment for walkers, runners and cyclists across the site and to the core and linear open spaces including to the Class 1 open space to the west and thirteen LEAP / LAP play areas throughout the proposed development;
- Landscape areas are retained and enhanced towards the site boundary and throughout the site to allow for connected habitat creation and wildlife corridors. This will include areas managed for biodiversity and ecosystems that will see a net gain of biodiversity on the site;

In terms of the core Open Space, the following elements are designed into the proposed development:

All age groups will be catered for with the layout based on best practice in terms of safe and aesthetic design proposals that will complement interaction between varied groups with Universal Design being the overriding consideration. This will include provision of playgrounds to cater for the recreational and educational requirements of children of residents. These will be designed to be both secure and overlooked in line with RoSPA safety advice and European Standard (EN 1176). Playgrounds are located well away from any ESB infrastructure;

The proposed layout includes set aside areas of public open space which is interconnected by landscaped links or pedestrian paths having a functional, amenity, environmental and aesthetic purpose with a mix of

informal and formal landscape character with recreational and amenity spaces. This extends to 5.26 hectares and is equivalent to over 20% of the Application Site lands.

Figure 10.6: Proposed Open Space and Play Areas



- On-going open space management plans will identify areas that can be managed to encourage habitat creation as the designed landscape measures mature and evolve;
- Retention of existing hedgerow extending to 907 linear meters in length to the core of site that will form part of public and incidental open space. This hedgerow will be gapped up and augmented with native species. (This should be measured against the fact that the consented development on these lands has planning consent to remove nearly all the internal hedgerows);
- The site layout has been designed in a manner that allows for natural surveillance of all open spaces with houses fronting these areas to give a feeling of security and encourage positive social behaviour;
- The design sets out a clear distinction between public, communal and private spaces; and
- Open spaces are designed with consideration given to their long term management ensuring this is not onerous with heavy resource requirements.

10.7.2 CONSTRUCTION PHASE

The proposed development will entail significant groundworks to facilitate construction of the residential properties, associated buildings, open space and infrastructure. A key consideration in landscape terms during the construction period is ensuring the retention and storage of suitable top soil to provide an appropriate growing medium (i.e. soil) for successful establishment on soft landscape treatments.

Materials or rock excavated from the existing site will be crushed for re-use where possible thus negating the requirement for import of additional fill. All topsoil will be retained for use on site with much of it being reused in the retained open spaces.

During the construction period hoardings are likely to be installed to the construction area to restrict access and views into the site. Publicity material may be displayed on the hoardings to inform the public and passers-by about the proposed development.

The retained internal and boundary hedgerows will be managed to remove dead, dying and dangerous branches and excessive scrub or brier. The works will also entail management of trees on site suffering from Ash die-back disease. For retained trees, the recommendations given in BS5837:2012 Guide for trees in relation to construction will be adopted to ensure site and tree safety. The works would be undertaken in winter months. Further works would include control of disturbance including dust, mud, noise, lighting.

Table 10.21: Summary of Construction Works Effects – Post Mitigation

Area	Sensitivity	Summary	Magnitude	Significance	Significant (Yes / No)
Application Site	Medium	Loss of vegetation and change of baseline setting from open fields to construction site.	Major	Slight Adverse	Major. Yes
Flemington Lane	Medium	Changes to local sense of place but works mostly screened from these areas	Moderate	Slight Adverse	Major. Yes
Clonard Road	Medium	Changes to local sense of place related to new road junction and change of views.	Major	Slight Adverse	Medium. No
West Balbriggan	Medium	Changes to local sense of place but works partially screened from club premises.	Slight / Moderate	Slight Adverse	Medium. No
Balbriggan	Medium / High	Changes to peripheral town edge area from construction works	Slight	Slight Adverse	Low. No.
LCA Coastal Character Type	Medium / High	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible. No.

10.7.3 OPERATIONAL PHASE

The appearance of the development is a key influence on how the site is perceived by the public, so the proposed development includes for extensive landscape and open space works with the overall objective of providing a layout that integrates the development into the surrounding landscape and visually blends into the Flemington / Clonard / Balbriggan area.

The total area of open space or landscape areas extends to 5.26 hectares with this distributed evenly across the site including Class One Open Space and Public Open space including eight pocket parks and one main public open space with a LEAP (play area) aside a community building. Further open space is associated with residual and private amenity or residential areas with the objective of coordinated landscape connectivity, visual consistency, and green infrastructure integration that is accessible to all and serves the amenity needs of proposed residents. Thirteen designated play areas are proposed across the site. These and the public open spaces are designed to be overlooked from the surrounding development to ensure safety in design with multiple connections and access points offered throughout. Further integrated elements relating to the landscape in terms of remediation, mitigation and enhancement include the following:

- The C-Ring road leading into and through the development will be planted with street trees in broad grass verges and park edge to create a strong green link for motorists, cyclists and pedestrians;

- Public Open Space extends to 2.87 hectares and includes extensive planting with a mix of native and ornamental tree species to create a natural environment with colour and seasonal interest. The general principle will correspond with FDP Objectives for Open Space provision with recreational and amenity spaces to the core of the site in a major new parkland space;
- Provide a framework of spaces to create focal points to the design and identify functional nodes such as entrances of buildings, allowing people to gather without interfering with residents in their apartments / houses and spaces to cater for needs of children;
- Biodiversity and habitat creation or enhancement is a core objective in terms of landscape design to the site edge and include retention of key hedgerows to the south of the proposed development. Hedgerows Nos. 1, 2 (part), 3 (majority), 11, 13, 14, 33 (part), 34, 37, 39, 40, 41, 42, 43, 44, 46 (part), 57, 63, 64, 70, 71, 72 & 93 will all be retained and protected;
- Landscape works are proposed to enhance accessibility to and the setting of the Holy Well (NIAH DU001-004) to the north of the site with the objective of protecting the existing environment surrounding the well and preserve the well itself. The majority of vegetation will be retained and protected though brier and gorse will be managed;
- Due regard has been given with the landscape design coordinating with engineers in terms of Sustainable Urban Drainage Systems (SuDS) as required in terms of swales, compensation areas and retained watercourses or culverts;
- The planting of 466 no. semi-mature trees will give instant impact and provide enclosure and screening. High canopy trees or ones that will be easy to manage are specified to be used along main roads and streets to ensure vehicular sightlines are retained. No lime trees (*Tilia cordata*) are to be planted along streets;
- Provision of playgrounds to cater for the recreational and educational requirements of children of residents but comply with the distance requirements as set out in the FDP of 25m between them and nearest residential properties. No play areas are located in SUD areas; and
- The open spaces are designed with consideration given to long-term management ensuring this is not onerous with heavy resource requirements.

The landscape works include for planting of trees within parkland areas and the central boulevard core through the proposed development that will entail 466 no. semi-mature' or 'extra-heavy standard' size trees. The majority of open space is in grass or meadow. The collective trees will, as they mature, assist in merging the proposed development into the surrounding landscape and local views as well as set about creation of the areas new landscape character.

Further landscape works will include the planting of 2.068km of native hedgerows, the augmentation of 907m of existing hedgerows, wooded structure / belts and amenity planting (4,280m²). The extent of planting will more than compensate for the loss of any vegetation on this site and enhance the overall wooded character, biodiversity and ecological nature of the site.

Planting and augmentation of existing boundary hedgerows will consist of evergreen and deciduous trees with under-story scrub mix. A range of plant species and heights will be selected to provide quick establishment and assist in visual integration. Amenity planting will consist of trees, native woodlands, hedgerows, shrub / groundcover planting, meadow / wildflower and grass seeding works. As the planting matures, it will change the nature of the site and its visual amenity and the height of planting for assessment purposes is as follows:

- Planting at Year 1 : 3 metres;
- Planting at Year 15 : 8 metres; and

- Planting at maturity : 20 metres (i.e. Year 25)

Plants selected are predominantly indigenous and species based on those in the “All-Ireland Pollinator Code 2021-2025” to ensure successful plant establishment that will merge visually and ecologically into this area. Landscape works will be undertaken by an ALCI approved landscape contractor and in accordance with BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces). Any trees or shrubs dying, damaged or removed will be replaced in the following planting session with plants of similar size and species. Trees supply and planting shall correspond to *BS 8545 Trees: from nursery to independence in the landscape - Recommendations*.

While the baseline site character will inevitably change due to this proposal, in terms of woodland and trees the retention of the majority of boundary trees and the new planting provides the opportunity for west Balbriggan to have increased tree cover and a more wooded character in the longer term with positive effects on amenity, environment and ecology.

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 10.22: Summary of Operational Phase – Post Mitigation

Area	Sensitivity	Summary	Magnitude	Significance	Significant (Yes / No)
Application Site	Medium	New townscape and associated open space.	Major	Slight Positive for Open Space	Major. Yes
Flemington Lane	Medium	Changes to local sense of place but development mostly screened from these areas	Moderate	Slight Adverse	Major. Yes
Clonard Road	Medium	Changes to local sense of place associated with new road and housing.	Moderate	Slight Adverse	Major. Yes
West Balbriggan	Medium	Changes to local sense of place but development partially screened from club premises.	Slight / Moderate	Slight Adverse	Medium. No
Balbriggan	Medium / High	Change of peripheral town edge area to townscape	Slight	Slight Adverse	Low. No.
LCA Coastal Character Type	Medium	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible. No.

10.8 DO NOTHING SCENARIO

The Application Site, located in close proximity to Balbriggan would likely remain as an area of predominantly agricultural farmland used for arable crops and/or pasture grazing for livestock or unused land and as a result any changes in landscape and visual amenity in this case would be negligible. Given

that the lands are primarily zoned “RA – Residential Area”, it would be likely that a further planning application of a comparable nature would be proposed at some stage though it cannot be predicted how the land-use in the intervening period would affect the implementation of this. Being on the town edge, it may be that farming practices become more difficult for animal management and any appeal to farming business may decline.

10.9 RESIDUAL EFFECTS

Any assessment must be measured against that of the situation that pertains at present. In the case of this site, it is – on balance – Medium in terms of landscape quality and condition and Low in terms of landscape sensitivity. The lands have been affected by the close proximity of the town edge and adjacent transport infrastructure and being on a rural/town interface, but the fields and peripheral areas have a “Everyday” character which may be appreciated by the local landowners or the low numbers of those who visit these fields but has no or little wider recognition of its value beyond that.

10.9.1 CONSTRUCTION PHASE

There is likely to be temporary Moderate Adverse effects during the construction period though the most appreciable aspects of this will not be easily discerned from publicly accessible areas within the wider Balbriggan townscapes and only be appreciable from closer areas to the Application Site on Flemington Lane, Clonard Road and existing housing areas that back onto the site.

10.9.2 OPERATIONAL PHASE

The proposed development is regarded as being permanent or long term in landscape and visual terms. The residual impacts are muted in terms of significance and magnitude on account of the site’s medium quality and condition rating and this equating to a general low sensitivity rating.

The most appreciable effects relate to the scale and nature of the proposed development which will result in houses and apartments occupying the majority of the site footprint although in excess of 20% is to be set out as open space with further landscape or green areas being part of a wider landscape development. While substantial, the proposed development, associated parklands, open space and public realm landscapes will include positive and significant elements that will contribute to the amenity, character and broader environment of this part of Balbriggan.

The proposals include for planting 466 no. standard trees and 2.068km of native hedgerows. In conjunction with the more general landscape works and planting, this will contribute to far more significant vegetation cover on this site than it has at present.

The low-lying topography and existing vegetation ensure the majority of areas within the Balbriggan area will experience no or negligible effects due to the proposal being visually obscured or not being a significant factor in any view or association with any visual amenity provision.

While recognising there are localised significant landscape and visual impacts, the proposed development, while sizeable, can be accommodated and absorbed into this part of Balbriggan without causing significant detrimental or unacceptable landscape or visual effects.

10.9.3 INDIRECT IMPACTS

There would be no indirect impacts on the landscape or visual amenities.

10.9.4 SECONDARY IMPACTS

There would be no secondary impacts on the landscape or visual amenities.

10.10 REINSTATEMENT

Following the core construction of the roads, buildings and infrastructure associated with the project and removal of temporary features, reinstatement would largely be seen in context with the mitigation measures as outlined above for the wider landscape and boundary treatments. This would include repair of disturbed land and implementation of the permanent landscape scheme to ensure the site blends properly into the Balbriggan / Flemington / Clonard Road surroundings. Such effects in LVIA terms would be transient and temporary and ultimately part of the landscape proposals works as set out in the Landscape Plans.

10.11 MONITORING

10.11.1 CONSTRUCTION PHASE

During this phase, the key effects will relate to ensuring the retained trees / vegetation identified as being retained are protected appropriately and in line with FDP Objective DMSO126 and BS: 5837 ensuring that ground disturbance and reinstatement / earthworks are outside protection zones. Further there will be monitoring of plant, cranes, lighting in terms of its proximity of visibility from sensitive receptors (homes, roads etc.) and effectiveness of temporary screening (hoardings, bunds, planting).

10.11.2 OPERATIONAL PHASE

The management of all public open spaces and areas will initially be undertaken by an ACLI approved landscape contractor with the developer remaining as client for duration of their contract for each section of the development. After 12 months the maintenance will be handed over to the long-term Management Company who will take over maintenance of set areas on completion of the development. There will be a five-year guarantee after construction that all the proposed planting works still exists and has established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. The planning application is accompanied by Landscape Management and Maintenance Plans setting out the objectives for management of external spaces or public realm areas for a 20-year period.

Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

10.12 INTERACTIONS

The landscape and visual impact of the proposed development can be related to cultural heritage, human beings, material assets and ecology.

Landscape works are proposed to enhance accessibility to and the setting of the Holy Well (NIAH DU001-004) to the north of the site with the objective of protecting the existing environment surrounding the well and preserve the well itself. The majority of vegetation will be retained and protected though brier and gorse will be managed. All other designated monuments or heritage sites are distant enough from the Application Site to not be subject to any significant changes to their setting or amenity.

The design process took into account visual impact to local residential properties in the adjacent Chieftains Way estate and off Flemington Lane where changes to the landscape setting could affect the setting and amenity. Landscape works to the boundary areas and integration of open spaces were designed into the scheme to minimise potential visual effects and assist in integration of the proposed development.

There are no designated natural environment areas or landscape close enough to be affected by activity on the Application Site. The proposed landscape works were reviewed by the project ecologist and plant species include significant indigenous species and other ecology measures are included which will have a positive effect as it matures on local ecology and diversity. This included coordination between landscape architect, arborist and ecologist in relation to assessing condition of hedgerows and how these could be retained, augmented and improved as part of this development to ensure their longer term contribution to this landscape.

10.13 CUMULATIVE EFFECTS

Cumulative landscape or visual effects are the combined effects that arise through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Collectively they give rise to an overall combined effect.

A significant cumulative effect will occur where the addition of the proposed development to other existing and developments results in a landscape or view that is defined by the presence of more than one major development and is characterised primarily by large scale development so that other patterns and components are no longer definitive.

The proposed development is a large-scale residential development that – as noted above – will in isolation result in significant changes to the Application Site but it is located in a designated for “RA – Residential Area” and therefore it and the adjacent lands are predicted to have land-uses of this nature and type. West Balbriggan is already defined by housing estates and associated infrastructural elements including busy roads. Further and on-going developments including Taylor’s Hill, Ladywell and Folkstown are adding to a collective sense of townscape expansion in west Balbriggan though this is in line with the Development Plan objectives. The changes from rural / urban edge and landscape to townscape has been substantial and this proposal will be part of this on-going change. The effects on the adjacent areas and Balbriggan generally deriving from this proposal have been assessed above.

Chapter 17 provides details of the cumulative assessment in respect of the proposed development including the list of relevant projects and the tables above provides an assessment.

The wider site forms part of a large RA ‘Residential Area’ zoned block of land contained by the Clonard Road, the future C Ring Road, the L1130 local road and Taylor Hill Boulevard. Planning permission has been granted for three residential developments within this block of land (Reg Refs F21A/0055, F22A/0670 and F22A/0670, known as Ladywell Phases 3A, 3B and 3C). In addition, there is an LRD permission located adjacent to the south LRD0048/S3E (ABP Ref: 321437-24) – Folkstown LRD 197 no. dwellings, and ancillary infrastructure to facilitate Phase 4 lands at Ladywell in Balbriggan in a mix of apartments, houses and commercial units as well as open space.

The proposed development would represent the sequential development of this area of residential zoned land on the western side of Balbriggan.

10.14 DIFFICULTIES ENCOUNTERED IN COMPILING

No particular difficulties were encountered in compiling information for this report.

10.15 REFERENCES

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition) by The Landscape Institute and the Institute of Environmental Assessment (2013);
- Guideline on the Information to be Contained in Environmental Impact Assessment Reports published by EPA (2022);

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment published by the Department of Housing, Planning and Local Government (2018);
- Fingal Development Plan 2023-2029 (mostly Chapters 9 and 14);
- Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals (2019) in conjunction with 3D Design Bureau who are preparing the accompanying photomontages;
- Landscape Institute Technical Guidance Note 2/19: Residential Visual Amenity Assessment;
- The National Planning Framework - Ireland 2040;
- National Spatial Strategy for Ireland 2002 – 2020;
- Fingal Biodiversity Action Plan;
- Our Balbriggan 2019-2025 Rejuvenation Plan;
- Design Manual for Urban Roads and Streets by the Department of Transport, Tourism and Sport and the Department of Housing, Planning and Local Government (2019);
- Urban design manual - a best practice guide by the Department of Environment, Heritage and Local Government (2009);
- National Landscape Strategy 2015–2025;
- Sustainable Urban Housing: Design Standards for New Apartments (2015); and
- Sustainable Residential Development in Urban Areas and the accompanying Urban Design Manual: A Best Practice Guide (2009).
- The Historic Landscape Characterisation in Fingal -Balbriggan and Environs by Siobhán Deery and Kieron Goucher Margaret Gowen & Co Ltd. for Fingal County Council;
- National Inventory of Architectural Heritage <http://www.buildingsofireland.ie>;
- National Parks and Wildlife Service (NPWS) and Environmental Protection Agency - <https://gis.epa.ie/EPAMaps> ; and
- <https://www.heritagecouncil.ie>

11.0 MATERIAL ASSETS - TRAFFIC AND TRANSPORTATION

11.1 INTRODUCTION

Transport Insights has been appointed by Glenveagh Homes Ltd. (the Applicant) to prepare an EIAR Material Assets - Traffic and Transport Chapter in relation to a proposed large scale residential development (LRD) at Flemington South, Balbriggan, Co. Dublin. The proposed development comprises 815 no. residential units, community and commercial floorspace as well as with associated access, car parking, and cycle parking facilities.

This chapter of the EIAR assesses the likely significant impacts of the proposed housing development in terms of vehicular, pedestrian and cycle access during both the construction and operational phases.

The chapter describes the methodology used; the receiving environment at the application site and surrounding area; the characteristics of the proposed development; the potential likely significant effects (direct, indirect, secondary, cumulative) during both the construction and operational phases; the remedial or reductive measures required to prevent, reduce or offset the likely significant adverse effects/impacts.

11.2 STATEMENT OF AUTHORITY

This chapter was completed by Cillian O'Reilly (BA, MSc, MTPS) of Transport Insights. Cillian is an Associate Director at Transport Insights. He holds a BA in Geography, Planning and Environmental Policy from University College Dublin, Ireland and a MSc in Transport and Planning from Cardiff University, U.K. Cillian has over 10 years U.K. and Irish experience in transport planning and engineering, including project management of a variety of small to large projects from feasibility to detailed design stage as well as in-depth analysis and collaboration with other disciplines to provide coordinated and succinct outputs.

11.3 STUDY METHODOLOGY

The following methodology has been adopted for this assessment:

Review of relevant available information including:

- National and local policy and guidance as outlined in Section 11.3.2;
- Site visit to quantify existing road network issues and identify local traffic characteristics;
- Comprehensive traffic survey scope of the local road network to understand baseline traffic flows;
- Detailed estimation of the transport demand that will be generated by the development both during the construction and operation phases; and
- Assessment of the impact of traffic on the local road network, car parking requirements and accessibility of the site by sustainable modes including walking, cycling and public transport.

This section of the EIAR outlines the methodology followed in order to carry out the Traffic and Transport Assessment set out within this Chapter. The approach pursued in undertaking the Assessment is consistent with the national best practice, namely Transport Infrastructure Ireland's Traffic and Transport Assessment (TTA) Guidelines (May 2014).

It should be noted that a comprehensive TTA Report, which includes a framework Mobility Management Plan (fMMP), and framework Construction Management Plan (fCTMP) has been produced in relation to the proposed development and is included in the application package.

11.3.1 CONSULTATION

Prior to a pre-planning Section 247 meeting, a Transport Briefing Note was submitted to FCC as part of the overall pre-application package. A Section 247 Pre-Application Consultation Meeting was held on 14th May 2025 and attended by representatives of FCC, the Applicant and the Design Team. Following the meeting, written notes were issued to the Applicant's team by FCC.

A Section 32D Meeting was held on 30th September 2025. A Section 32D Opinion letter was issued on the 24th of October 2025 to the Applicant's team by FCC. Section 8.5 of the 32D Opinion letter details the Transport Planning Section opinion. Opinion feedback has informed the transport assessment approach and the content of this Traffic and Transport EIAR chapter.

11.3.2 POLICY AND GUIDANCE

This section of the chapter provides an overview of transport planning policy and guidance deemed relevant to the proposed development and its assessment.

- **TII Guidance** – including TTA Guidelines (2014), Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts (October 2016) and Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021);
- **Design Manual for Urban Roads and Streets (DMURS)** - was jointly published by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government in 2013 and updated in 2019. DMURS provides clear guidance in relation to all aspects of road and street design, including carriageway and footpath widths, corner radii, stopping sight distances and sightlines, car parking dimensions and layouts, etc. DMURS guidance has underpinned key aspects of the current proposed development's design activities.
- **Sustainable Residential Developments and Compact Settlements** - the Compact Settlements Guidelines was published in January 2024 to "*set out policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements*". The Compact Settlements Guidelines is a statutory document augmenting other relevant guidance documents under Section 28 of the Planning and Development Act 2000, including the Housing Guidelines, as well as DMURS. Car and bicycle parking standards set out in these guidelines have informed the proposed provision of car and cycle parking within the proposed development.
- **GDA Transport Strategy 2022-2042** - published by the National Transport Authority (NTA) in early 2023 sets out the framework for investment in transport infrastructure and services in the Greater Dublin Area over the next two decades to 2042. Proposed infrastructure to be delivered for Balbriggan includes a proposed cycle network and as well as proposed public transport improvements, including DART+ Coastal North and BusConnects.
- **Fingal Development Plan 2023-2029** - sets the planning context and a strategic vision for the sustainable development of the County. The Development Plan supports sustainable mobility through pledges to contribute to improved public transport provision, in addition to measures to encourage and promote walking and cycling and the development of Mobility Management Plans. Car and bicycle parking standards set out in the Development Plan have informed the proposed parking provision (for apartments, commercial unit and community unit) within the proposed development. In addition, the Development Plan outlines proposals for the development of Fingal's transport network, of note, the Balbriggan (Northwestern) Relief Road, also referred to as the C-Ring Road, which routes through the proposed development.

11.3.3 STUDY AREA

With regard to traffic impact assessment, the Study Area of this EIAR chapter has included the section of Boulevard Road and Hamlet Lane that currently connects to the site. Flemington Lane and the L1130, both of which will have a new connection into the site in the future are included in the study area (see: Section 11.4.6.1). This EIAR chapter presents the expected impact of the proposed development on the traffic volumes, with the outputs thereof feeding into other EIAR chapters. The Study Area includes the

part of the regional road network directly receiving the traffic generated by the proposed development, which will subsequently distribute to other parts of the wider road network. Such definition of the Study Area is aligned with best practice. It should be noted that this EIAR Chapter has examined the application site's mobility-related characteristics with respect to a wider area of interest, including the entirety of Balbriggan Town.

11.3.4 SITE SURVEYS/INVESTIGATIONS

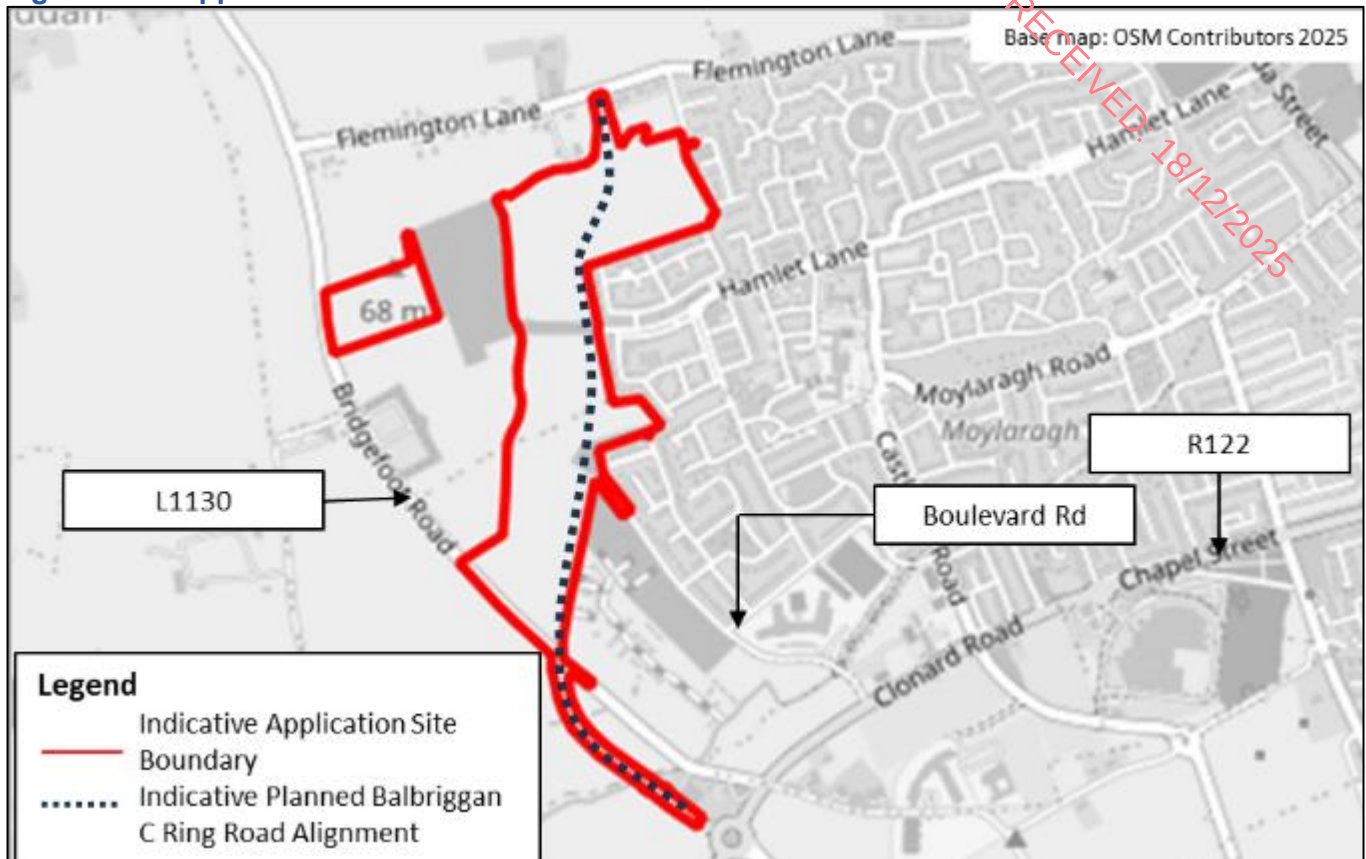
To assess the proposed development's potential impact, an appreciation of the existing situation first needs to be established. This section of the EIAR describes the existing site layout, access arrangements, the local road network and background traffic conditions. The existing conditions presented herein represent an evidence-based review, and have been informed by:

- a desktop review of the study area and its surrounding transport network, including general traffic road infrastructure, facilities for pedestrians and cyclists and public transport infrastructure and service provision;
- collection of traffic survey data within the local road network to capture current traffic conditions, including vehicle volumes and turning movements;
- a site assessment, undertaken on Monday 18 August 2025 to confirm facilities and operating conditions for all road users on the adjoining road network.

11.4 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

11.4.1 SITE LOCATION

The Flemington site is located west of Balbriggan, on lands bounded by residential lands in the south, a local road, L1130 in the west, the planned Balbriggan Ring Road through the centre, Flemington Lane to the north and additional residential to the east. The site is a ca 24.91 hectare greenfield site and has been zoned predominantly 'RA – Residential' in the Fingal Development Plan 2023-2029. The location of the application site is presented in , which follows.

Figure 11.1: Application Site Location

11.4.2 SITE PLANNING HISTORY

The Flemington site (subject of this LRD application) has previously been permitted for a 564 no. development (FCC Reg. Ref. LRD0006/S3/ABP Ref. LH06F.319343) and was granted permission with conditions in July 2024. The original plan was envisaged to include a total of 564 no. residential units, in addition to 3 no. creches. It was supported by a TTA undertaken by MPA in September 2021, based on traffic count data collected in 2018. The TTA involved developing an area-wide traffic model to identify the proportional increase in traffic levels at a number of junctions on the R122 corridor. Among those junctions, 8 no. were analysed in detail using junction modelling software.

Following consideration of the application including a response to a request for further information, FCC decided to refuse permission for the proposed development on the 22nd of February 2024. This decision was appealed to An Bord Pleanála (ABP) and ABP subsequently decided to overturn the previous refusal and to grant permission for the development subject to Conditions.

It should be noted that the current proposed development will replace and supersede the permitted development. Furthermore, the proposal includes delivery of the entire C-Ring Road section from the R122 roundabout in the south to Flemington Lane in the north, rather than just the section within the application site boundary as previously permitted (as per ABP Ref. LH06F.319343). The proposal would also see an increase in the total number of residential units across the site from 564 no. (as per ABP Ref. LH06F.319343) to 815 no. units (an increase of 251 no. units). Residential amenities such as two creches, a 730 sqm community pavilion and a 419 sqm retail unit are also part of the proposal. The approach pursued herein is consistent with that applied for the preceding permitted development and the associated TTA.

11.4.3 RELEVANT COMMITTED DEVELOPMENTS

Table 11.1 outlines the relevant committed development in the site's vicinity. These various developments have the potential to generate trips on the local road network and the table indicates how the potential trip generation of each has been considered the overall trip generation analysis.

Table 11.1: Committed Developments

Committed Development		Notes
Reference No.	Description	
FCC: F23A/0634	Permission for development at the existing waste recovery facility located at Stephenstown Business Park, Stephenstown, Balbriggan, County Dublin, K32X996.	The predicted trip generation, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.
FCC: F22A/0480	The development will principally comprise the construction of a two-storey warehouse unit with ancillary office and staff facilities and associated development as well as a single storey garage.	The predicted trip generation, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.
FCC: F22A/0033	The development will consist of a distillery (total floor area of floor area 5659m ²) which includes provision of an ancillary visitor centre, storage shed along with associated external plant.	The predicted trip generation, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.
FCC: F23A/0075	Permission for the construction of 4no. two storey terraced 3 bedroom dwellings, rear garden areas, boundary walls, connections to existing services and all associated site development works at Bremore Pastures, Balbriggan, County Dublin	The predicted trip generation, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.
FCC: F22A/0670	'Phase 3' to be known as 'Ladywell', within the townlands of, 'Clonard or Folkstown Great', 'Clogheder' & 'Flemington Balbriggan	The impact assessment set out in this Traffic and Transport chapter has included trip generation related to the Ladywell developments as committed development.
FCC: F22A/0526	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Clogheder & Flemington, Balbriggan	Traffic surveys undertaken to inform the baseline condition for the impact assessment include traffic related to this application.

Committed Development		Notes
Reference No.	Description	
FCC: F21A/0055	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Clogheder & Flemington, Balbriggan	Traffic surveys undertaken to inform the baseline condition for the impact assessment include traffic related to this application.
FCC LRD0048/S3E & ACP LH06F.321437	Phase 4 to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Clogheder & Flemington, Balbriggan	The impact assessment set out in this Traffic and Transport chapter has included trip generation related to the Ladywell developments as committed development.
ABP: 313210-22 SHD	On the 23rd of March 2023, ACP granted a 10-year permission to the Land Development Agency for development comprising inter alia the construction of 817 no. residential units, located at Castlelands, ca. 1km south of Balbriggan town centre	The predicted trip generation, as set out in the associated planning application documentation, indicates the vast majority of trips will utilise the R132 and/ or R127. As such, projected background growth included in the impact assessment is considered to account for potential additional trips from this development on the wider road network.
Ref. F21A/0576 ABP: 312529-22	An application for the Advance Infrastructure at Castlelands, Balbriggan.	The predicted trip generation, as set out in the associated planning application documentation, indicates the vast majority of trips will utilise the R132 and/ or R127. As such, projected background growth included in the impact assessment is considered to account for potential additional trips from this development on the wider road network.
FCC: F24A.1069E ACP: 322977-25	Demolition of existing 2 no. storey building on site (c. 1,070 sqm), the construction of a 2 no. storey discount retail store with off-licence use (c. 2,448 sqm gross floor area) ca. 1,356 sqm net retail floor area.	The predicted trip generation characteristics, as set out in the associated planning application documentation, note the majority of trips to the development would already exist on the road network and that a minimal amount would be new trips. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.
ABP: PL06F.304673 FCC: F19A/0131	Demolition of existing school and construction of new 3 storey Post Primary School & single storey Special Education Needs Unit. Granted 20/09/2019	The predicted trip generation for the local road network, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network
ABP: OA29N.319866	Proposed development known as North Irish Sea Array ("NISA") Offshore Wind Farm.	The predicted trip generation for the local road network, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.
ABP: NA29N.320164	DART + Coastal North Railway Order 2024 - Northern Line between Dublin City Centre and Drogheda including the Howth Branch. ACP	The predicted trip generation for the local road network, as set out in the associated planning application documentation, is considered minimal. As such, projected background growth included in the impact assessment is considered to account for the potential of additional trips on the local road network.

Committed Development		Notes
Reference No.	Description	
	Decision Make Railway Order with conditions.	

11.4.4 SURROUNDING ROAD NETWORK

11.4.4.1 R122 Regional Road

The R122 is a two-way regional road, which runs in an east-west alignment and connects the Naul Village and Balbriggan.

The R122 has a uniform horizontal and vertical alignment adjacent to the development site. Its carriageway adjacent to the site is approximately 10.0 metres wide, and its overall cross-section includes a single general traffic lane in each direction. Cycle tracks and footpaths are provided on both sides of the road, separated from the carriageway by grass verges.

A 60 km/ h speed limit is in operation on this road in the application site's vicinity and public street lighting is present.



11.4.4.2 L1130 Local Road

The L1130 is a two-way, single carriageway local road, which runs in an north-south alignment and forms part of a local road link from the R132 at Gormanstown in the north via Bridgefoot, Flemington, and Clonard Cross, connecting to the R132 again in southwest Balbriggan. The L1130 is noted to be also referred to as Clonard Road in some external sources, however this name has not been used herein to avoid confusion with the R122.



The L1130 has a uniform horizontal and vertical alignment adjacent to the development site. Its carriageway adjacent to the site is approximately 5.5 metres wide, with no road markings provided to delineate traffic lanes in opposite directions. The carriageway is bounded by green verges and ditches alongside the application site's boundary, with the overall road environment being rural in nature. A 60 km/ h speed limit is in operation on this road in vicinity of the site.

11.4.4.3 Boulevard Road

The Boulevard Road is a two-way, single carriageway local road, which runs in a north-south alignment from a T-junction with the R122 for ca. 700 metres to the north.

Boulevard Road has a uniform vertical alignment adjacent to the development site, with an S-curve bend in its southern part (close to the R122 junction). Its carriageway adjacent to the site is approximately 7.0 metres wide, with no road markings provided to delineate traffic lanes in opposite directions.

Cycle tracks and footpaths are provided on the eastern side of the carriageway and partially also on the western side, separated from the carriageway by grass verges. A 50 km/ h speed limit is in operation on this road and public street lighting is present.

11.4.4.4 Flemington Lane

Flemington Lane is a two-way, single carriageway local road, which runs in an east-west alignment from a T-junction with the L1130 to the west and the R132 to the east. The western ca. 750 metres of the road is rural in nature and does not feature any form of pedestrian facilities. It travels in a primarily straight horizontal and vertical alignment with there being a minor bend and vertical alignment change occurring 750 metres from the western junction.

After the minor bend, the road has a footpath on the southern side of the road and residential units present along the south until it connects with the R132. The eastern section is ca. 900 metres in length. There is a faded broken white line separating the carriageway. No formal on-street parking facilities are provided on Flemington Lane. A posted 50km/ h speed limit is in operation on this road with street lighting present in the western, residential section.

11.4.5 KEY JUNCTIONS

11.4.5.1 R122/ Balbriggan Ring Road Roundabout

The R122/ Balbriggan Ring Road is a large, 4-arm roundabout with an inscribed circle diameter (ICD) of ca. 70 metres and two traffic lanes on the circulating carriageway. The roundabout is located ca. 350 metres to the southwest from the R122/ The Boulevard Junction. Flared two-lane approaches and single egress lanes are provided at each arm of the roundabout. The northern arm is currently unused.

Pedestrian and cyclist facilities are available along each road approaching the roundabout, with pedestrian crossings provided across the southern and eastern arms. Street lighting and standard signage and road markings are provided.

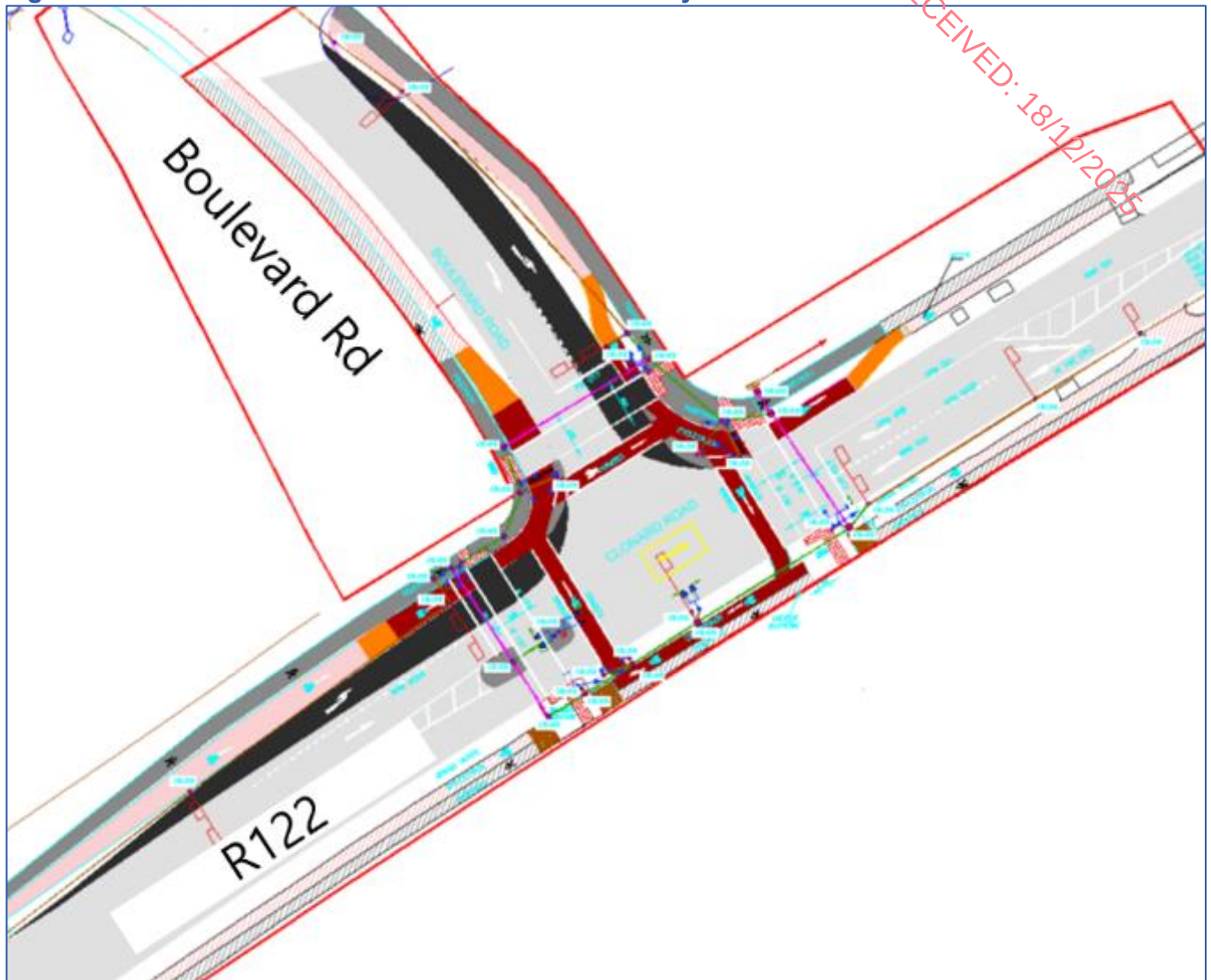
11.4.5.2 R122/ Boulevard Road Junction

The R122/ Boulevard Road Junction is a 3-arm priority (stop) controlled junction located adjacent to the application site's southeastern corner, where Boulevard Road (minor road) approaches the R122 (main road) from the north. Footpaths and cycle tracks are provided along the R122 and Boulevard Road, with dropped kerbs provided to facilitate crossing the Boulevard Road arm. Street lighting and standard signage, with a stop-sign at the northern (Boulevard Road) approach, are provided at the junction.

The R122/ Boulevard Road Junction is being upgraded as part of the permitted residential development to the south (by Glenveagh Homes Ltd.). The junction upgrade will involve signalisation of the junction and improved pedestrian and cyclists facilities. Provision of 30 metres long flares would be provided at the western and northern arms so that two approach lanes can be provided at each arm. The existing ghost island at the western arm (the R122) will be replaced by a channelising island to improve traffic safety and provide a refuge for pedestrians crossing. Formal crossing facilities for pedestrian and cyclists shall be provided at all three junction arms.

The junction upgrade would result in enhanced capacity in addition to improved traffic safety. The junction upgrade proposed as part of this proposal is equivalent to the one permitted as part of the Ladywell development, so that future capacity increase is ensured.

Permitted junction layout is presented in Figure 11.2: .

Figure 11.2: Permitted R122/ Boulevard Rd Junction Layout

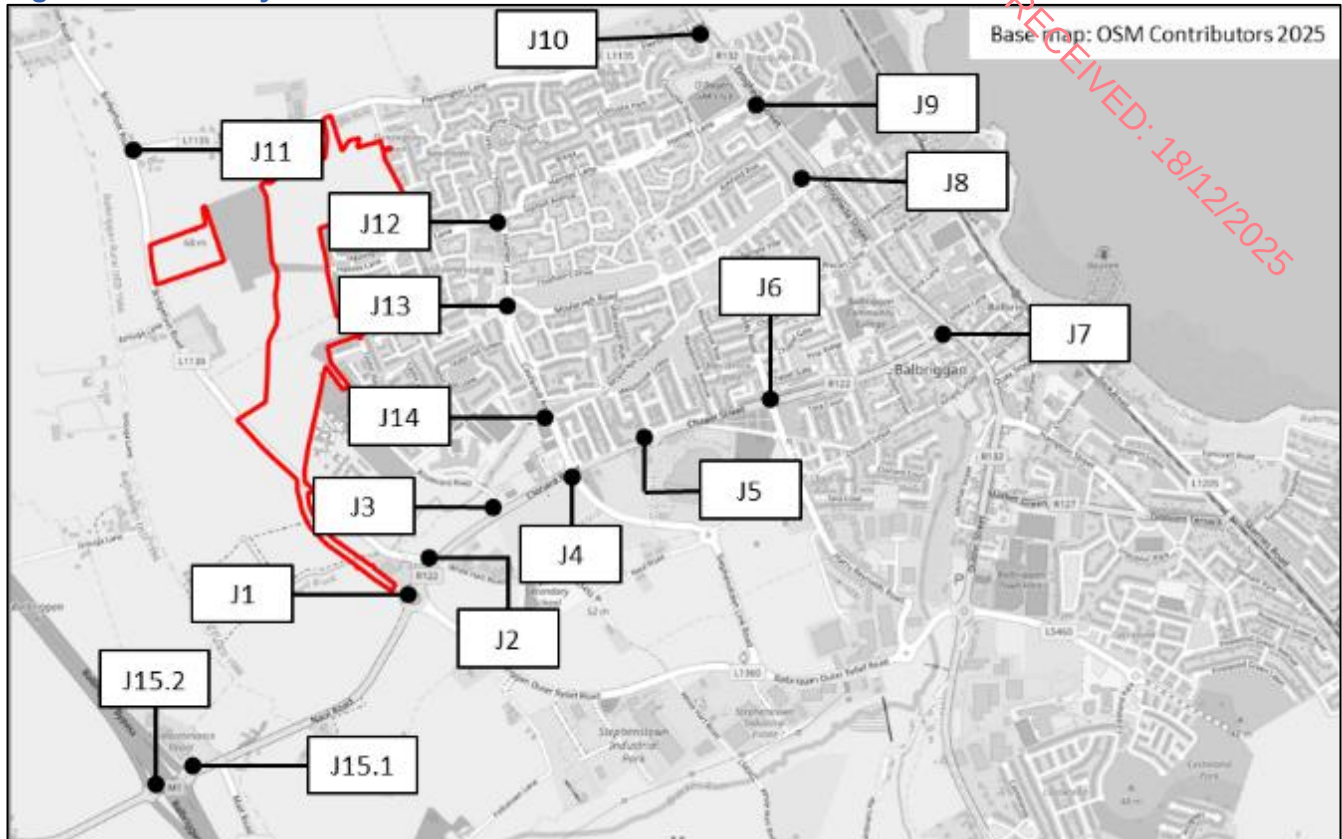
11.4.6 FUTURE ROAD INFRASTRUCTURE UPGRADES

11.4.6.1 Balbriggan (Northwestern) Ring Road (C-Ring Road)

Balbriggan (Northwestern) Relief Road, also referred to as the C-Ring Road, is a planned single carriageway distributor road, which shall connect the existing R122/ Balbriggan (Southwestern) Ring Road Roundabout (located ca. 100 metres to the southwest from the application site's southwestern corner) to the R132 in north Balbriggan. The road will bypass the existing built-up or zoned lands in urban Balbriggan and will travel through the application site. The Balbriggan Ring Road R122 to R132 scheme has been included in the Fingal Development Plan 2023-2029 among the FCC's proposals for development of Fingal's transportation network. The proposed development is to deliver the C-Ring Road, stretching from the R122 roundabout in the south to Flemington Lane in the north.

11.4.7 EXISTING TRAFFIC

To provide an understanding of the existing baseline traffic flows on the road network in the vicinity of the site, extensive traffic surveys were undertaken at 16 no. key junctions. The subject junctions are illustrated in Figure 11.3, with a list provided below the figure.

Figure 11.3: Surveyed Junction Locations

Surveyed Junctions are as follows:

- J1 – R122/ Balbriggan Outer Relief Road Roundabout (4-arm, priority-controlled);
- J2 – R122/ L1130 Junction (4-arm, priority-controlled);
- J3 – R122 Clonard Road/ Boulevard Road Junction (3-arm, priority-controlled, to be upgraded);
- J4 – R122 Clonard Road/ Castlemill Link Road Junction (4-arm, signal-controlled);
- J5 – R122 Chapel Street/ Tesco Access/ Westbrook Park Roundabout (4-arm, priority-controlled);
- J6 – R122 Chapel Street / Harry Reynolds Road Junction (4-arm, signal-controlled)
- J7 – R132 Drogheda Street/ R122 Chapel Street Junction (3-arm, signal-controlled);;
- J8 – R132 Drogheda Street/ Harry Reynolds Road Junction (3-arm, signal-controlled);
- J9 - R132 Drogheda Street/ Cardy Rock Crescent/ Hamlet Lane Junction (4-arm, priority-controlled);
- J10 – R132/ Bremore Cottages Junction (3-arm, priority-controlled);
- J11 – Flemington Road/ Flemington Lane Junction (3-arm, priority-controlled);
- J12 – Hamlet Lane/ Trimleston / Barons Hall Rise Junction (4-arm, priority-controlled);
- J13 – The Park/ Moylaragh Road / Castlemill Link Road Junction (3-arm, signal-controlled);
- J14 – Castlemill Link Road/ Hampton Gardens Drive/ Taylor Hill Walk Junction (3-arm, priority-controlled);
- J15.1 – M1/ R122 Interchange (M1 Interchange 6), Eastern Roundabout; and
- J15.2 – M1/ R122 Interchange (M1 Interchange 6), Western Roundabout.

The above junctions have been selected to cover the key routes to and from the site, and they include the junction locations surveyed for the permitted Flemington Lane TTA. The scope of the survey work has provided an extensive coverage of the road network within Balbriggan. A Junction Turning Count survey was undertaken at each of the 16 no. locations on Wednesday 09th April 2025 and covered a 12-hour period from 07:00 to 19:00 hours.

The baseline survey data was analysed and the AM and PM network peak hours were defined. The AM peak hour is from 08:00-09:00hrs with the PM peak hour from 16:45-17:45hrs.

The recorded 12-hour traffic flows have been converted to Annual Average Daily Traffic (AADT) flows using the TII's Project Appraisal Guidelines Document 'Unit 16.1: Expansion Factors for Short Period Traffic Counts'.

Table 11.2 outlines the AADT base flows (not including traffic flows from committed, permitted development or proposed development) for 2025 (data year) as well as the Do Nothing (DN) Year of Opening (YoO) (2027), DN YoO +5 (2032) and DN YoO +15 (2042). AADT flows for the YoO, YoO+5 and YoO+15 have been developed by applying forecast growth factors determined from TII's Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projects (October 2021) for Central County Dublin.

Table 11.2: AADT Traffic Flows

Junction No.	Arm / Road	Base Background Flows			
		2025 AADT	2027 AADT	2032 AADT	2042 AADT
		(Veh)	(Veh)	(Veh)	(Veh)
J1	Arm A - R122(NNE)	13,061	13,543	14,485	15,403
	Arm B - Unnamed Road	5,868	6,092	6,532	6,974
	Arm C - R122 (SSW)	15,246	15,813	16,919	18,005
J2	Arm A - R122(NNE)	11,535	11,957	12,778	13,571
	Arm B - Naul Road	324	336	359	383
	Arm C - R122 (SSW)	13,030	13,508	14,439	15,341
	Arm D - L1130	3,253	3,374	3,612	3,847
J3	Arm A - R122(NNE)	11,097	11,506	12,305	13,084
	Arm B - Unnamed Road	11,531	11,958	12,790	13,603
	Arm C - R122 (SSW)	2,201	2,283	2,443	2,600
J4	Arm A - R122(NNE)	6,310	6,544	7,000	7,446
	Arm B - Naul Road	5,733	5,944	6,356	6,757
	Arm C - R122 (SSW)	11,060	11,468	12,264	13,040
	Arm D - L1130	8,479	8,792	9,401	9,993
J5	Arm A - R122(NNE)	7,543	7,823	8,367	8,900
	Arm B - Naul Road	4,867	5,046	5,396	5,736
	Arm C - R122 (SSW)	6,348	6,583	7,042	7,491
	Arm D - L1130	949	984	1,052	1,118
J6	Arm A - R122(NNE)	4,632	4,802	5,133	5,455
	Arm B - Naul Road	4,181	4,336	4,638	4,934
	Arm C - R122 (SSW)	7,550	7,829	8,375	8,908

Junction No.	Arm / Road	Base Background Flows			
		2025 AADT	2027 AADT	2032 AADT	2042 AADT
		(Veh)	(Veh)	(Veh)	(Veh)
	Arm D - L1130	7,032	7,292	7,798	8,293
J7	Arm A - R122(NNE)	10,135	10,512	11,250	11,976
	Arm B - Unnamed Road	3,830	3,971	4,246	4,513
	Arm C - R122 (SSW)	10,212	10,593	11,335	12,066
J8	Arm A - R122(NNE)	9,960	10,331	11,057	11,771
	Arm B - Unnamed Road	4,989	5,175	5,538	5,894
	Arm C - R122 (SSW)	9,300	9,647	10,324	10,989
J9	Arm A - R122(NNE)	1,520	1,576	1,686	1,793
	Arm B - Naul Road	9,180	9,522	10,191	10,848
	Arm C - R122 (SSW)	3,098	3,213	3,437	3,657
	Arm D - L1130	7,244	7,514	8,042	8,563
J10	Arm A - R122(NNE)	7,122	7,388	7,908	8,420
	Arm B - Unnamed Road	1,698	1,760	1,882	1,999
	Arm C - R122 (SSW)	5,870	6,091	6,522	6,949
J11	Arm A - R122(NNE)	3,067	3,181	3,402	3,619
	Arm B - Unnamed Road	1,418	1,470	1,571	1,669
	Arm C - R122 (SSW)	3,110	3,225	3,449	3,668
J12	Arm A - R122(NNE)	370	383	409	435
	Arm B - Naul Road	4,599	4,769	5,102	5,427
	Arm C - R122 (SSW)	4,026	4,176	4,468	4,756
	Arm D - L1130	2,884	2,993	3,204	3,414
J13	Arm A - R122(NNE)	6,064	6,289	6,727	7,156
	Arm B - Unnamed Road	2,584	2,679	2,865	3,047
	Arm C - R122 (SSW)	6,889	7,144	7,639	8,122
J14	Arm A - R122(NNE)	681	706	755	803
	Arm B - Naul Road	8,504	8,818	9,428	10,022
	Arm C - R122 (SSW)	586	608	649	690
	Arm D - L1130	7,769	8,055	8,612	9,155
J15.1	Arm A - R122(NNE)	16,395	17,008	18,206	19,387
	Arm B - Naul Road	5,306	5,505	5,893	6,277

Junction No.	Arm / Road	Base Background Flows			
		2025 AADT	2027 AADT	2032 AADT	2042 AADT
		(Veh)	(Veh)	(Veh)	(Veh)
J15.2	Arm C - R122 (SSW)	11,301	11,724	12,552	13,370
	Arm D - L1130	2,174	2,256	2,419	2,582
	Arm A - R122(NNE)	11,286	11,708	12,534	13,349
	Arm B - Naul Road	5,612	5,822	6,232	6,637
	Arm C - R122 (SSW)	5,908	6,131	6,569	7,005
	Arm D - L1130	2,353	2,442	2,617	2,791

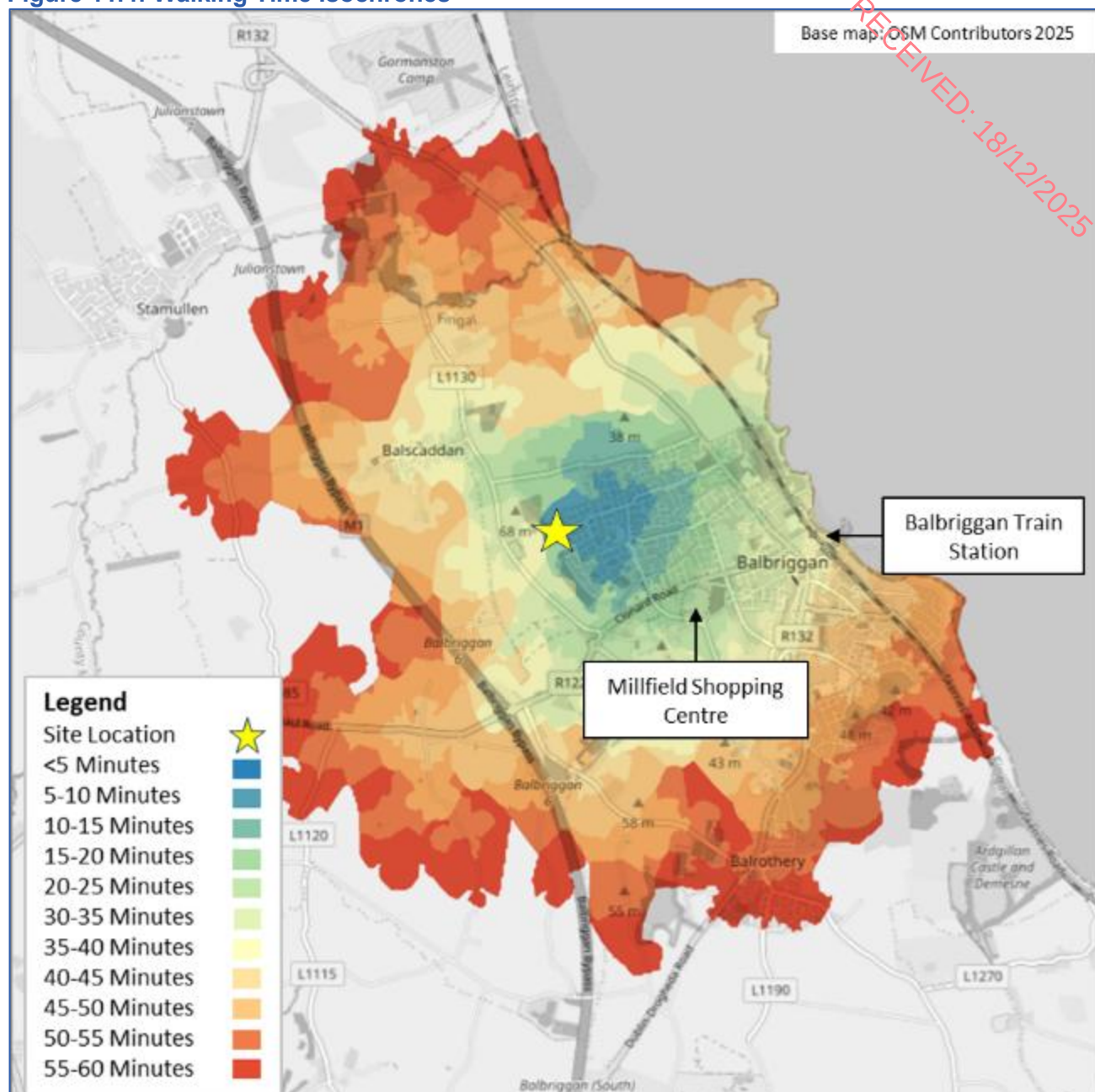
11.5 ACTIVE TRAVEL ACCESSIBILITY

11.5.1 EXISTING WALKING AND CYCLING INFRASTRUCTURE

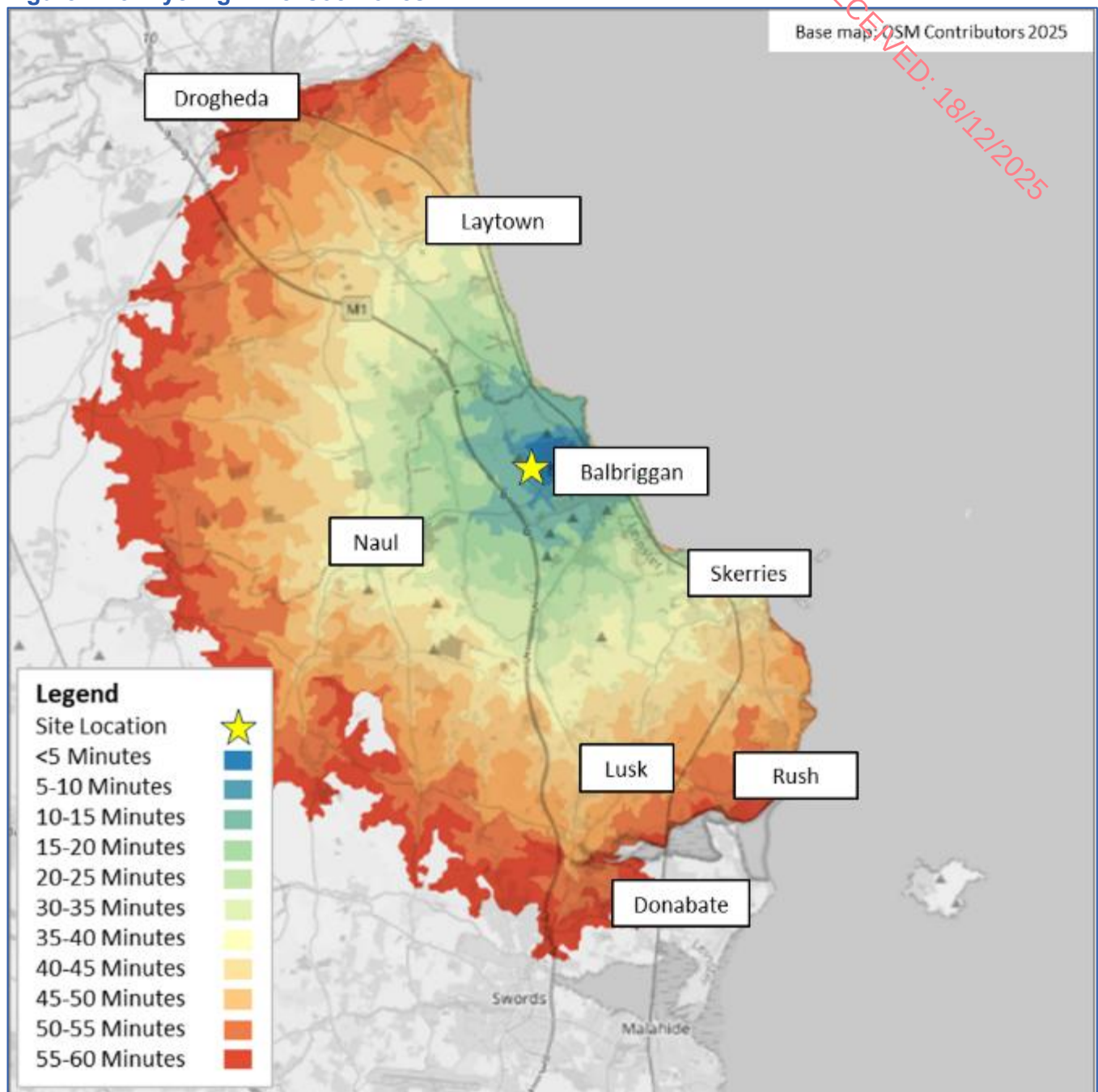
Footpaths are provided along most roads in urban Balbriggan, including the R122 and Boulevard Road in the application site's vicinity. However, footpaths are missing along the L1130, which form parts of the site's western boundary as well as the western section of Flemington Lane. Dedicated cycling infrastructure in the site's general vicinity includes segregated tracks provided on the R122 and Boulevard Road.

Figure 11.4 presents the application site's accessibility by walking, showing travel time from various locations to the site. As can be seen from this figure, the site can be reached by walking from a variety of locations within Balbriggan, with the extent of the 60 minutes' isochrone reaching Balrothery in the South, Newtown in the west and Bremore in the north. It is deemed that walking represents a viable option for those residing in Balbriggan.

Figure 11.4: Walking Time Isochrones



The following Figure 11.5 presents the application site's accessibility by cycling, showing travel time from various locations to the site.

Figure 11.5: Cycling Time Isochrones

As can be seen in the preceding figure, the application site can be accessed within a 20-minute cycle from all parts of Balbriggan. Distance-wise, cycling is also a viable alternative for trips to destinations including Skerries, Lusk, Laytown and Naul. Donabate and Drogheda are on the periphery of viable cycling distance with both being accessible within a 60-minute cycle.

11.5.2 PROPOSED CYCLE INFRASTRUCTURE IMPROVEMENTS

The planned layout of cycle infrastructure network within Dublin has been set out within the Greater Dublin Area Cycle Network Plan (part of the GDA Transport Strategy), published by the NTA. The network plan identifies the R122 as a secondary cycle link along with Flemington Lane, with Hamlet Lane forming a feeder route, which will create a route through and surrounding the centre of Balbriggan. The expansion

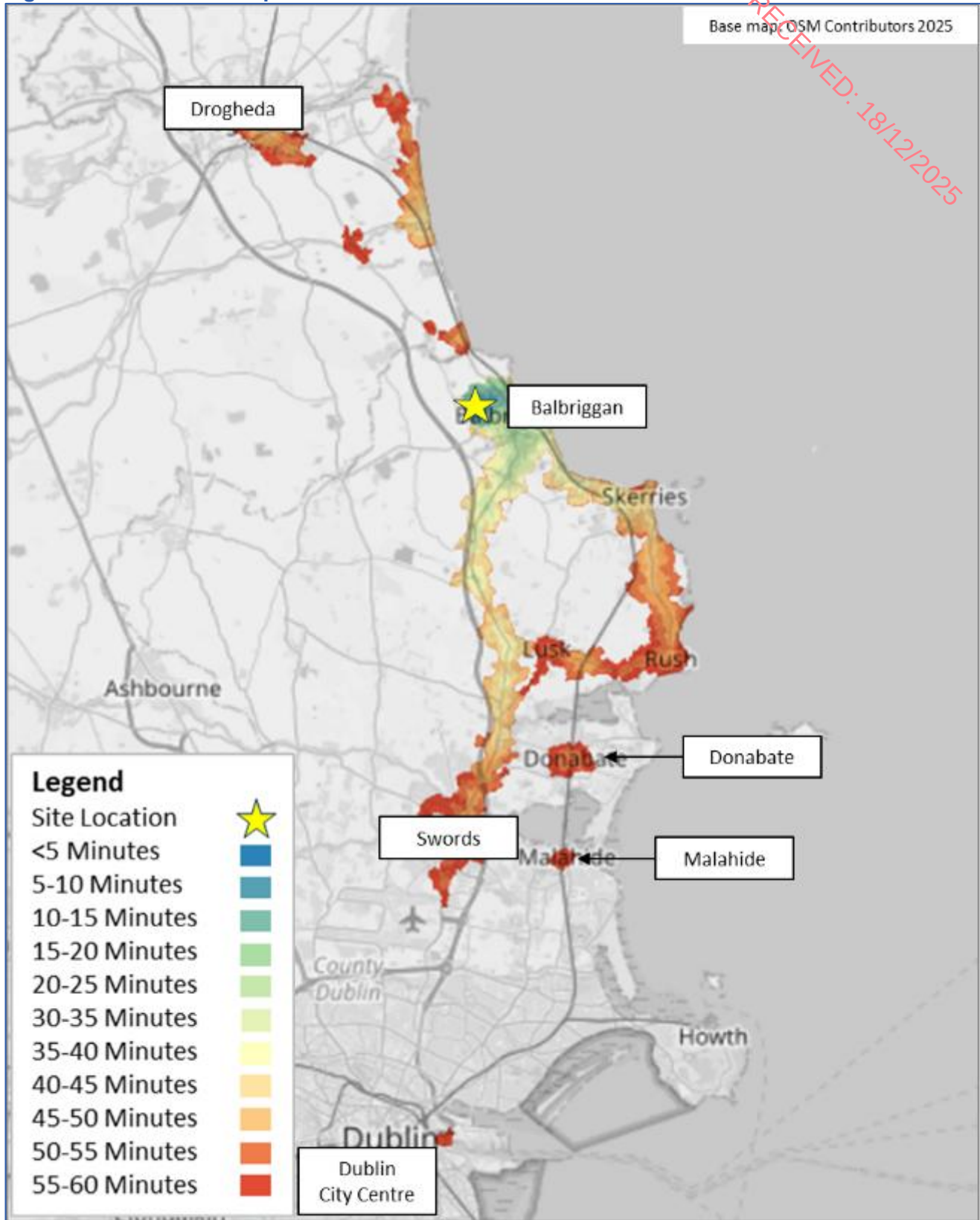
of dedicated cycling facilities in Balbriggan will enhance options for sustainable local mobility, with the planned interurban routes and coastal greenway enabling longer distance travels in the area.

It is also noted that the proposed development will include active travel facilities with pedestrian and cycle infrastructure provided along the C-Ring Road through the site and to Hamlet Lane. Although this proposed infrastructure is not specified in the GDA Cycle Network Plan, it will provide direct links for future residents of the development to other existing and planned active travel infrastructure in the vicinity of the development.

11.5.3 EXISTING PUBLIC TRANSPORT ACCESSIBILITY

Figure 11.6 presents the application site's accessibility by public transport, showing travel time from various locations to the site.

Figure 11.6: Public Transport Travel Time Isochrones



As can be seen from the figure, the available public transport services enable access across Balbriggan and to Dublin City Centre, Drogheda, Swords and all towns along the coastal railway line in under 60 minutes. Central Dublin can also be accessed using the 191 service, albeit only in the morning peak, with returns in the evening peak. There is also a local link 192 bus linking Swords to Balbriggan with 10 services

a day as well as a local link 195 bus connecting Balbriggan to Ashbourne with 5 services a day from Balbriggan.

11.5.4 PROPOSED PUBLIC TRANSPORT IMPROVEMENTS

The final proposals from the New Dublin Area Bus Network Project, developed as part of the broader BusConnects programme, were published by the NTA in September 2020 after considerable public consultation. The revised network includes changes to the bus network within the application site's vicinity. The revised network includes the L85 service which will travel from Balbriggan to Dublin Airport. It will replace the existing 33b bus route that operates currently. The L85 will begin from St Peter and Paul's church which is ca. 2.6km (~35 minute walk) east of the site. It is unclear when the planned bus network improvements will be implemented.

The DART+ Coastal North Project rail improvement project will provide an extension of the existing electrified rail network from Malahide station to Drogheda MacBride station and will provide the infrastructure to facilitate an increase in the rail capacity on the Northern Line between Dublin City Centre and Drogheda MacBride Station. As a result, existing commuter services shall be replaced by DART-branded services. Following project implementation, the number of peak time services between Drogheda MacBride and Dublin Connolly should be increased from current 11 no. services to 24 no. services during the 3 hour AM peak period, resulting in increased attractiveness of public transport by increased capacity and reduced waiting times. A Railway Order application for the project was approved by An Coimisiún Pleanála in August 2025.

11.5.5 SHARED MOBILITY

Shared mobility services currently available in Balbriggan include 4 no. GoCar stations with 6 no. vehicles are available. The station closest to the application site is located by the Millfield Shopping Centre, ca. 1.4 km away from the site's southern access point. Furthermore, it should be noted that the western part of Balbriggan, including the application site, is currently mostly greenfield, with few sources of potential demand for shared mobility services. The lands in question are currently undergoing rapid urbanisation, with the availability of car sharing services likely to expand to meet demand. Furthermore, it is noted that the proposed development shall provide 10 no. car share spaces, located adjacent to the proposed apartment blocks.

11.6 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The overall proposed development comprises 815 no. residential units with 2 no. creches and a community pavilion as well as a commercial/ retail component, including:

- 194 no. Apartment Units including 1 and 2 and 3 bedroom apartments;
- 610 no. Houses including 2, 3 and 4 bed units;
- 11 no. 2 bed Later Living Units;
- 2 no. creche Units (Total 180 spaces);
- 730 sqm Community Pavilion; and
- 419 sqm Commercial Unit.

The proposed residential units will be accompanied by associated pedestrian, cycle, and car circulation and parking facilities as well as various open space and recreational areas. Furthermore, the mobility needs of the development's future residents will also be supported by a comprehensive and tailored package of measures (including a MMP) aimed at enabling and promoting use of sustainable transport modes, and facilitating them in living low-car owning and car-free lifestyles. The commercial and community spaces included in the proposed development is intended to primarily serve local catchment.

The internal road network has been designed with a focus on safety to ensure a self-enforcing low speed environment. The features applied to do so include road deflections, raised junctions, and raised crossings points. The internal roads feature sections with a formal carriageway as well as shared space sections, which would be designated as homezones. The application of shared spaces provides a tangible indication of road hierarchy. Moreover, filtered permeability principle has been applied to facilitate convenient circulation of pedestrians and cyclists without encouraging travel by car. The design is noted to be compliant with DMURS.

A full description of the proposed development is set out in Chapter 2 of this EIAR.

11.6.1 PROPOSED CONSTRUCTION PHASING

The development is proposed to be delivered in 3 no. sequential phases, beginning in the southern sections of the site and progressing northwards over time. The early phases shall include key infrastructure, including the construction of part of the C-Ring Road, to enable suitable access and connectivity within the area. The phasing is shown on drawing no. A507-DCA-XX-XX-DR-A-040, prepared by Doran Cray Architects, included with the application.

It is noted, for the purposes of the traffic impact assessment detailed in Section 11.7, a reasonable worse-case scenario has been assumed, in that, a full build-out of the entire development is assumed in the year of opening. This is considered to provide a robust impact assessment approach.

11.6.2 ACCESS ARRANGEMENTS

Due to the extent of the application site and the current proposed development being distributed between its different parts, the proposed development will include multiple access points for motorised vehicles and/ or active travel.

Vehicular access points can be summarised as follows:

- **Site Access 1:** direct access off Boulevard Road;
- **Site Access 2:** direct access off Hamlet Lane;
- **Site Access 3:** direct access off Flemington Lane; and
- **Survey Location J1:** direct access off R122/ C-Ring Road Roundabout.

Figure 11.7 illustrates the four proposed vehicle access points.

Figure 11.7: Proposed Vehicular Access Arrangements

The Boulevard Road and Hamlet Lane accesses will be via newly built signal-controlled junctions. The Flemington Lane access shall be via a priority-controlled (STOP) junction while the R122/ C-Ring Road access will utilise the existing northern stub of the R122 roundabout. The R122 roundabout will remain priority controlled. Each of the four vehicular access points noted will form part of the C-Ring Road, enabling north south travel through the development, and shall be delivered as part of the proposed development.

With regard to active travel permeability, the current proposed development will be connected to footpaths and cycle tracks running along all adjacent roads, namely the R122, Hamlet Lane and Boulevard Road. Filtered permeability will be applied in that the number of active travel accesses will be higher than the number of vehicular accesses. The location of individual active travel access points can be examined in the site layout drawing, which forms part of this submission package.

11.6.3 SERVICING

Refuse collection vehicles are proposed to access/ egress the site using all vehicular accesses, as specified above. Refuse collection truck routes will be planned to minimise turning movements, with waste bins being taken to designated collection locations prior to the waste contractor arriving.

Delivery/ loading activity for the proposed retail/commercial unit, located in apartment Block F, will be facilitated by a proposed loading bay. The bay is located adjacent to the apartment block and accessed via the car parking area.

Swept path analysis has been carried out in order to ensure that both refuse vehicles and emergency vehicles will be capable of accessing, circulating within and egressing the site. The layout has been designed in accordance with DMURS.

11.6.4 PEDESTRIAN AND CYCLE FACILITIES

Pedestrian footpaths within the development are proposed as having a width of 2.0 metres. The site features multiple active travel entrances from all sides to ensure high permeability. Controlled pedestrian crossings, including at Site Access 1 and 2 and individual locations, are provided along the C-Ring Road to ensure safe travel. As part of the proposed development, the following segregated cycling facilities will be provided:

- A 2.0-metre wide one-way segregated cycle track on either side of the C-Ring Road, through the site, providing a north-south link for cyclists
- A 2.0-metre wide one-way segregated cycle track on either side of the section of Hamlet Lane which passes through the site (provision will link with proposed provision on C-Ring Road); and
- Site Access 1 and 2 junction layouts shall include segregated cycle facilities as per the NTA's Cycle Design Manual guidance.

Other than the facilities noted above, segregated cycle links will not be provided along residential streets within the site, as this is not deemed required in the residential, traffic-calmed environment. The site features multiple active travel entrances from all sides to ensure high permeability.

11.6.5 BUS STOP FACILITIES

As part of the proposed development, a number of bus stop locations have been identified along the C-Ring Road. Four locations have been identified, one to the south of Site Access 1, one between Site Access 1 and 2 and the third and fourth to the south of Site Access 3. Each location is proposed to include a bus stop on either side of the carriageway and on-carriageway bus cage markings. The bus stops shall be served by future town bus service(s).

11.6.6 CYCLE PARKING

The proposed cycle parking provision has been designed to encourage cycling as a key mode of transport to and from the proposed development and reduce the reliance of residents and visitors on private car use. The FCC Development Plan Standards and the Sustainable Residential Development and Compact Settlements Guidelines (January 2024) have been consulted in order to determine a suitable amount of cycle parking to be accommodated within the proposed development.

To meet the residents' cycle parking demand, 938 no. covered and secure (behind locked doors) spaces will be provided. 644 of these spaces will be for terraced housing with 294 no. cycle spaces to be provided for the apartment units. Cargo bike parking spaces are to be provided as part of the development proposal. For the proposed creches, a total of 68 no. cycle parking spaces are proposed along with 24 no. spaces for the community building and 16 no. spaces for the commercial space. 170 no. visitor spaces will be provided across the site in the form of Sheffield stands. A total of 1,144 no. cycle spaces is to be provided throughout the development.

11.6.7 CAR PARKING

The proposed car parking provision has been designed to ensure balance between the residents' mobility needs with the focus on alternative modes of transport, while being cognisant of the site's locational and accessibility characteristics. The FCC Development Plan Standards and the Sustainable Residential Development and Compact Settlements Guidelines (January 2024) have been consulted in order to determine a suitable amount of car parking.

Accordingly, and bearing in mind different needs of prospective dwellers, the proposed allocation of resident parking spaces relative to dwelling size and type is presented in Table 11.3, which follows.

Table 11.3: Proposed Car Parking Space Allocation

Parking Type	Total No. Parking Spaces
In-Curtilage Resident Parking	704
On-Street Residential Parking	148
Visitor Parking	29
Later Living Parking	9
Apartment Parking	115
Car Share Bays	10
Creche Parking	17
Commercial Parking	5

As can be seen in the preceding table, 704 no. parking spaces shall be provided within curtilage of the house units, 148 no. on-street residential spaces, 9 no. spaces for later living units, 115 no. spaces provided for apartments. In addition, 17 no. car parking spaces are provided for the crèches and 5 no. parking spaces (includes accessible parking space provision) for the commercial unit.

Following on from feedback noted in the LRD Opinion Letter from FCC at the Section 32D stage, 10 no. car share parking spaces are proposed as part of the development. These spaces are located in Character Area 1 and Character Area 4. The car share spaces will provide future residents with an alternative to private car ownership and encourage sustainable mobility practices.

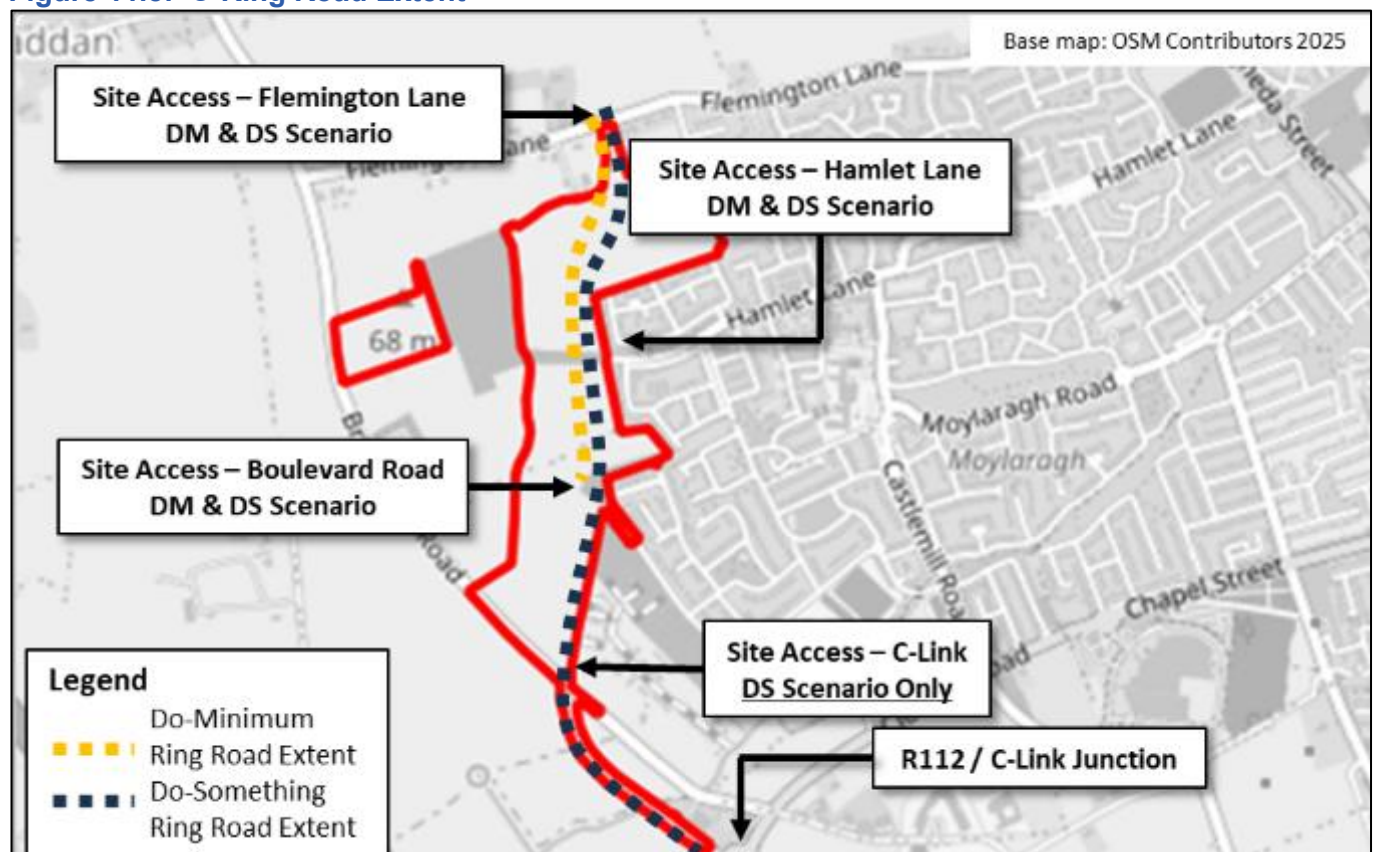
The total car parking provision includes 1,037 no. spaces, which translates into 1.27 no. spaces per unit. All of the proposed parking bays will be in the form of external surface parking spaces. Resident parking spaces will be located either in the individual unit's curtilage or, where the same is not practical, in groups of on-street spaces in proximity of the relevant units. All resident parking spaces will be perpendicular. A plan of car parking facilities is included in the application package.

11.7 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

11.7.1 SCENARIO DEFINITIONS

In line with national best practice, the potential impact of the development traffic has been analysed for future years – the YoO 2027 and YoO+15 2042. The scenarios created are a Do Minimum and a Do Something. The scenarios enable the development of the analysis for the future years and ensure potential future background traffic growth, traffic flows from the permitted and committed developments as well as potential changes to the road network (see Figure 11.8) were captured.

Figure 11.8: C-Ring Road Extent



Two scenarios are outlined below:

- The Do-Minimum scenario includes the additional traffic associated with relevant permitted and committed development has been accounted for. This has included the permitted Flemington Lane development as per the extant permission (i.e. 564 no. units), and the committed Ladywell Phase 4 development (as its delivery is understood to be ongoing). The traffic forecast to be generated by both above developments has been added to the DN flows to obtain the Do-Minimum flows. Note part of the C-Ring Road (Flemington Lane to just south of the C-Ring Road/ Boulevard Road junction) has been assumed open in this scenario, enabling traffic to use the link road and associated junctions.

- The Do Something scenario is defined as including the committed Ladywell development traffic, permitted Flemington Lane traffic and the proposed development traffic (i.e. the net increase in units from the permitted scheme). It is important to note that the entire C-Ring Road section between Flemington Lane and the R122 Roundabout and its associated junctions are assumed open for this scenario, enabling traffic from the committed, permitted and proposed development to travel south via the new road and not solely via Boulevard Road as assumed in the Do-Minimum scenario. This is reflected in modified traffic distribution assumptions.

11.7.2 DO MINIMUM TRAFFIC ESTIMATION

The Flemington Lane TTA and the TTA for the Ladywell developments quantified development traffic for their respective development. In both cases, the same trip generation rates, based on TRICS trip rates, were utilised. Table 11.4 sets out TRICS trip generation rates.

Table 11.4: TRICS Unit Vehicular Trip Rates per Land Use*

Unit Type	Daily Trip Rate per Unit
'Houses Privately Owned' (per dwelling)	6.294
'Flats Privately Owned' (per dwelling)	2.009
Duplex (per dwelling) average of A and B	4.152

The forecast traffic generation of the permitted (i.e. Flemington Lane) and committed (i.e. Ladywell) developments has been estimated using the daily trip rates derived from the TRICS trip generation database. A summary of predicted vehicular trip rates is presented below.

Table 11.5: Permitted and Committed Residential Component Vehicular Trip Generation

Development Proposal	All Day Two-Way
Ladywell Development	2,439
Flemington South	2,933
Overall	5,372

As can be seen in the preceding table, delivery of the proposed Ladywell development and Flemington development would result in all-day vehicular trip generation of ca. 5,372 trips on an average day.

11.7.2.1 Do Minimum Trip Distribution

As noted in Section 11.7.1 and illustrated in Figure 11.8, the road network will change depending on the scenario. This in turn has implications for the distribution and assignment of traffic assessed within the impact assessment.

For the Do-Minimum Scenario, it is assumed that part of the C-Ring Road, from Flemington Lane to just south of the C-Ring Road/ Boulevard Road junction and its associated junctions (3 no. site access junctions) are operational. The distribution set out in the permitted and committed TTAs (which were agreed by ABP) is applied to the permitted and committed development traffic, as it relates to distribution of traffic on the section of the C-Ring Road and Boulevard Road. The permitted and committed traffic distribution is outlined as follows:

- Boulevard Road - 70%;
- Hamlet Lane – 20%; and
- Flemington Lane – 10%.

The majority of traffic is assumed to access/ egress from the south (towards Balbriggan Town Centre and the M1) of the permitted and committed development via Boulevard Road (and the R122). The assignment of permitted and committed development traffic at the 16 no. surveyed junctions is based on the observed traffic flows (similar methodology to the permitted TTA albeit baseline survey undertaken at different years). Note no changes have been made to the underlying DN assignment which forms part of the Do Minimum scenario.

11.7.2.2 Do-Minimum Traffic Forecasting

Building upon the background traffic forecast presented and the relevant committed and permitted development's traffic generation estimates presented in Section 2, future traffic volumes at the surveyed junctions in the Do-Minimum scenario are presented below.

Table 11.6: Do Minimum Vehicular AADTs

Junction No.	Arm / Road	YoO 2027		YoO+15 2042	
		Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)	Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)
J1	Arm A - R122(NNE)	13,543	15,739	15,403	17,600
	Arm B - Naul Road	6,092	6,389	6,974	7,271
	Arm C - R122 (SSW)	15,813	17,712	18,005	19,904
J2	Arm A - R122(NNE)	11,957	14,160	13,571	15,774
	Arm B - Naul Road	336	336	383	383
	Arm C - R122 (SSW)	13,508	15,711	15,341	17,544
	Arm D - L1130	3,374	3,374	3,847	3,847
J3	Arm A - R122(NE)	11,506	13,064	13,084	14,641
	Arm B - R122	11,958	14,161	13,603	15,806
	Arm C - Boulevard Road	2,283	6,043	2,600	6,361
J4	Arm A - R122(NE)	6,544	8,461	7,446	9,363
	Arm B - Unnamed Road	5,944	5,944	6,757	6,757
	Arm C - R122 (SW)	11,468	13,025	13,040	14,597
	Arm D - Castlemill Link Road	8,792	9,151	9,993	10,353
J5	Arm A - R122(NE)	7,823	9,235	8,900	10,312
	Arm B - Unnamed Road	5,046	5,367	5,736	6,057
	Arm C - R122 (SW)	6,583	8,405	7,491	9,313
	Arm D - Westbrook Park	984	1,072	1,118	1,207
J6	Arm A - R122(E)	4,802	5,507	5,455	6,160
	Arm B - Harry Reynolds Road	4,336	4,476	4,934	5,074
	Arm C - R122 (W)	7,829	9,242	8,908	10,320
	Arm D - Harry Reynolds Road	7,292	7,858	8,293	8,860
J7	Arm A - R132 (SE)	10,512	11,075	11,976	12,539
	Arm B - R122 Chapel Street	3,971	4,677	4,513	5,219
	Arm C - R132 (NW)	10,593	10,986	12,066	12,459
J8	Arm A - R132 (SE)	10,331	10,661	11,771	12,102
	Arm B - Harry Reynolds Road	5,175	5,348	5,894	6,067
	Arm C - R132 (NW)	9,647	9,989	10,989	11,331
J9	Arm A - R122(NNE)	1,576	1,651	1,793	1,867
	Arm B - Naul Road	9,522	9,925	10,848	11,251
	Arm C - R122 (SSW)	3,213	3,873	3,657	4,318
	Arm D - L1130	7,514	7,697	8,563	8,746

Junction No.	Arm / Road	YoO 2027		YoO+15 2042	
		Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)	Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)
J10	Arm A - R132 (SE)	7,388	7,769	8,420	8,801
	Arm B - Bremore Cottages	1,760	2,029	1,999	2,268
	Arm C -R132 (NW)	6,091	6,272	6,949	7,130
J11	Arm A - Flemington Road	3,181	3,310	3,619	3,748
	Arm B - Flemington Lane	1,470	1,739	1,669	1,938
	Arm C - Flemington Lane (SE)	3,225	3,364	3,668	3,807
J12	Arm A - Trimleston	383	390	435	442
	Arm B - The Rise	4,769	5,430	5,427	6,087
	Arm C - Barons Hall Rise	4,176	4,627	4,756	5,208
	Arm D - Hamlet Lane	2,993	4,090	3,414	4,511
J13	Arm A - The Park	6,289	6,718	7,156	7,586
	Arm B - Moylaragh Road	2,679	2,741	3,047	3,110
	Arm C - Castlemill Road	7,144	7,511	8,122	8,490
J14	Arm A - Hampton Gardens Drive	706	710	803	807
	Arm B - Castlemill Link road (SSE)	8,818	9,177	10,022	10,382
	Arm C - Taylor Hill Walk	608	608	690	690
	Arm D - Castlemill Link Road (NW)	8,055	8,418	9,155	9,519
J15.1	Arm A - R122 (ENE)	17,008	18,901	19,387	21,280
	Arm B - M1 On Slip	5,505	6,035	6,277	6,807
	Arm C - R122 (WSW)	11,724	12,882	13,370	14,527
	Arm D - M1 Off Slip	2,256	2,462	2,582	2,787
J15.2	Arm A - R122 (ENE)	11,708	12,864	13,349	14,505
	Arm B - M1 Off Slip	5,822	6,328	6,637	7,143
	Arm C - R122 (WSW)	6,131	6,566	7,005	7,440
	Arm D - M1 On Slip	2,442	2,657	2,791	3,006

As can be seen in the preceding table, the scale of development in the current permitted and committed development is expected to result in a notable increase in traffic volumes on a small number of junctions.

11.7.3 CONSTRUCTION PHASE

The construction traffic impacts of the development are dependent on the capacity of the local road network to facilitate access to the site by the cars and vans associated with the workforce together with the HGVs and heavy construction machinery associated with the construction activities. The ability to accommodate temporary parking for contractors and storage of materials on site is another key consideration.

A framework CTMP has been prepared by Transport Insights and is included as part of the overall application package. Informed by information provided by the application, the CTMP has been based on the following assumptions regarding the proposed development's key construction traffic related attributes.

- Construction programme: Phase 1 to 3, assumed 5 year construction programme
- Normal construction working hours:
 - Monday to Friday 07:00hrs to 19:00hrs; and
 - Saturday 07:00hrs to 14:00hrs.

- estimated staff numbers:
 - up to ca. 40 no. staff during the site set up phase; and
 - up to ca. 150 no. staff during peak construction phase.
- estimated construction-related traffic generation:
 - ca. 60 Heavy Goods Vehicle (HGV) arrivals and ca. 60 HGV departures each day for the first 2 to 3 months for initial site set up. Decreasing to ca. 15- 18 HGV arrivals and departures on a typical day;
 - 5 Light Goods Vehicle (LGV) arrivals and 5 LGV departures otherwise in each of the weekday peak activity hours,
 - 40 car arrivals in the weekday AM peak hour, and
 - 40 car departures in the weekday PM peak hour.

Based on the construction traffic assumptions set out above, the corresponding AADT values have been quantified and are outlined in Table 11.7. Note as the construction programme is assumed to take 5 years, only the YoO was assessed as construction would be completed before the YoO+15.

Table 11.7: Do Something Construction Vehicular AADTs

Junct ion No.	Arm	YoO 2027		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
J1	Arm A - R122(NNE)	15,739	15,841	0.65%
	Arm B - Naul Road	6,389	6,434	0.70%
	Arm C - R122 (SSW)	17,712	21,386	20.74%
	Arm D - C Link Road	0	5,730	N/A
J2	Arm A - R122(NNE)	14,160	11,200	-20.91%
	Arm B - Naul Road	336	246	-26.66%
	Arm C - R122 (SSW)	15,711	11,403	-27.42%
	Arm D - L1130	3,374	0	-100.00%
J3	Arm A - R122(NE)	13,064	13,864	6.13%
	Arm B - R122	14,161	12,168	-14.07%
	Arm C - Boulevard Road	6,043	4,851	-19.73%
J15.1	Arm A - R122 (ENE)	18,901	19,382	2.55%
	Arm B - M1 On Slip	6,035	6,170	2.23%
	Arm C - R122 (WSW)	12,882	13,176	2.28%
	Arm D - M1 Off Slip	2,462	2,514	2.12%
J15.2	Arm A - R122 (ENE)	12,864	13,158	2.28%
	Arm B - M1 Off Slip	6,328	6,457	2.03%

Junct ion No.	Arm	YoO 2027		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
	Arm C - R122 (WSW)	6,566	6,676	1.68%
	Arm D - M1 On Slip	2,657	2,712	2.06%

While the overall development is large in scale, the corresponding increases in the number of construction-related trips per day or in the duration of the construction period are expected to be incremental and temporary. It is noted that the minus percentage values are due to changes in background traffic flows on the network and not related to construction traffic. As such, no significant effects on the local road network are anticipated.

11.7.4 OPERATIONAL PHASE

11.7.4.1 Do Something Trip Generation

The proposed Flemington South LRD development shall result in a net increase of 251 no. residential units compared to the permitted scheme. To quantify the proposed development trip generation the same TRICS trip rates used for the permitted scheme (see Table 11.4) have been utilised for the proposed development. This ensures consistency with the permitted scheme development traffic approach.

To determine development trip generation, the proposed development trips for the 815 no. unit scheme (based on TRICS values) were calculated. Subsequently, the permitted trips were deducted with the difference in trips signifying the trip generation of the net increase of 251 no. units. Table 11.8 below presents the expected number of daily trips to be generated by the proposed development.

Table 11.8: Proposed Development Vehicular Trip Generation

Development Proposal	Daily Trips Two-Way
Flemington South LRD	1,365

11.7.4.2 Do Something Trip Distribution

The road network in the DS scenario changes from that in the Do-Minimum scenarios. The proposed development is to include the C-Ring Road as per the Do-Minimum scenario as well as providing a link south to the R122 roundabout (see Figure 11.8). The proposed development includes 4 no. site access points (Flemington Lane, Hamlet Lane, Boulevard Road and the new R122 Southern Link). To reflect the change in road network, the proposed development flows along with the permitted and committed flows are distributed as follows:

- Boulevard Road - 35%;
- Hamlet Lane – 20%;
- Flemington Lane – 10%; and
- Southern Link – 35%.

Compared to the Do-Minimum scenario, the distribution now splits the traffic access/ egressing south over two junctions instead of just the Boulevard Road junction. The same distribution is applied to the permitted and committed traffic flows. The assignment of the permitted, committed and proposed development traffic flows at the 16 no. surveyed junctions is based on the observed traffic flows with the exception of Junction

2. It is assumed that the northern arm of Junction 2 will become a dead-end once the C-Ring Road connection south is implemented and as such surveyed traffic flows impacted by this change have been redistributed via Junction 1 before continuing north on the C-Ring Road to link up with the L1130 once again.

11.7.4.3 Do Something Traffic Forecast f

The following Table 11.9 presents the DS and DM scenario forecast traffic volumes at the 16 no. surveyed junctions as well as the 3 no. proposed sites access junctions in the future YoO, and YoO+15. The table also provides the % increase at each junction between the DM and DS scenarios.

Table 11.9: Do Something Vehicular AADTs

Junction No.	Arm	YoO 2027			YoO+15 2042		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)	Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
J1	Arm A - R122(NNE)	15,739	15,631	-0.69%	17,600	17,638	0.22%
	Arm B - Naul Road	6,389	6,434	0.70%	7,271	7,315	0.62%
	Arm C - R122 (SSW)	17,712	21,176	19.55%	19,904	23,693	19.04%
	Arm D - C Link Road	0	5,730	N/A	0	6,201	N/A
J2	Arm A - R122(NNE)	14,160	10,990	-22.39%	15,774	12,469	-20.95%
	Arm B - Naul Road	336	246	-26.66%	383	281	-26.51%
	Arm C - R122 (SSW)	15,711	11,193	-28.76%	17,544	12,701	-27.61%
	Arm D - L1130	3,374	0	-100.00%	3,847	0	-100.00%
J3	Arm A - R122(NE)	13,064	13,864	6.13%	14,641	15,442	5.47%
	Arm B - R122	14,161	11,958	-15.56%	15,806	13,603	-13.94%
	Arm C - Boulevard Road	6,043	4,641	-23.21%	6,361	4,958	-22.05%
J4	Arm A - R122(NE)	8,461	8,948	5.76%	9,363	9,850	5.20%
	Arm B - Unnamed Road	5,944	5,944	0.00%	6,757	6,757	0.00%
	Arm C - R122 (SW)	13,025	13,421	3.04%	14,597	14,993	2.71%
	Arm D - Castlemill Link Road	9,151	9,243	1.00%	10,353	10,444	0.88%
J5	Arm A - R122(NE)	9,235	9,594	3.89%	10,312	10,671	3.48%
	Arm B - Unnamed Road	5,367	5,449	1.52%	6,057	6,139	1.35%

Junction No.	Arm	YoO 2027			YoO+15 2042		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)	Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
	Arm C - R122 (SW)	8,405	8,868	5.51%	9,313	9,776	4.97%
	Arm D - Westbrook Park	1,072	1,095	2.10%	1,207	1,229	1.86%
J6	Arm A - R122(E)	5,507	5,687	3.26%	6,160	6,339	2.91%
	Arm B - Harry Reynolds Road	4,476	4,511	0.79%	5,074	5,110	0.70%
	Arm C - R122 (W)	9,242	9,601	3.88%	10,320	10,679	3.48%
	Arm D - Harry Reynolds Road	7,858	8,002	1.83%	8,860	9,004	1.63%
J7	Arm A - R132 (SE)	11,075	11,252	1.59%	12,539	12,715	1.41%
	Arm B - R122 Chapel Street	4,677	4,856	3.83%	5,219	5,398	3.44%
	Arm C - R132 (NW)	10,986	11,120	1.21%	12,459	12,593	1.07%
J8	Arm A - R132 (SE)	10,661	10,747	0.80%	12,102	12,187	0.70%
	Arm B - Harry Reynolds Road	5,348	5,391	0.80%	6,067	6,110	0.71%
	Arm C - R132 (NW)	9,989	10,077	0.88%	11,331	11,419	0.78%
J9	Arm A - R122(NNE)	1,651	1,669	1.15%	1,867	1,886	1.01%
	Arm B - Naul Road	9,925	10,028	1.03%	11,251	11,354	0.91%
	Arm C - R122 (SSW)	3,873	4,041	4.33%	4,318	4,486	3.89%
	Arm D - L1130	7,697	7,743	0.60%	8,746	8,792	0.53%
J10	Arm A - R132 (SE)	7,769	7,866	1.25%	8,801	8,898	1.10%
	Arm B - Bremore Cottages	2,029	2,097	3.36%	2,268	2,336	3.01%
	Arm C - R132 (NW)	6,272	6,318	0.73%	7,130	7,176	0.65%
J11	Arm A - Flemington Road	3,310	3,343	0.99%	3,748	3,781	0.88%
	Arm B - Flemington Lane	1,739	1,807	3.93%	1,938	2,006	3.52%

Junction No.	Arm	YoO 2027			YoO+15 2042		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)	Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
	Arm C - Flemington Lane (SE)	3,364	3,399	1.05%	3,807	3,843	0.93%
J12	Arm A - Trimleston	390	392	0.47%	442	444	0.41%
	Arm B - The Rise	5,430	5,597	3.09%	6,087	6,255	2.76%
	Arm C - Barons Hall Rise	4,627	4,737	2.36%	5,208	5,317	2.10%
	Arm D - Hamlet Lane	4,090	4,369	6.82%	4,511	4,790	6.18%
J13	Arm A - The Park	6,718	6,830	1.66%	7,586	7,698	1.47%
	Arm B - Moylaragh Road	2,741	2,757	0.58%	3,110	3,125	0.51%
	Arm C - Castlemill Road	7,511	7,607	1.27%	8,490	8,585	1.12%
J14	Arm A - Hampton Gardens Drive	710	710	0.00%	807	807	0.00%
	Arm B - Castlemill Link road (SSE)	9,177	9,269	1.00%	10,382	10,473	0.88%
	Arm C - Taylor Hill Walk	608	608	0.00%	690	690	0.00%
	Arm D - Castlemill Link Road (NW)	8,418	8,510	1.09%	9,519	9,610	0.96%
J15.1	Arm A - R122 (ENE)	18,901	19,382	2.55%	21,280	21,761	2.26%
	Arm B - M1 On Slip	6,035	6,170	2.23%	6,807	6,942	1.98%
	Arm C - R122 (WSW)	12,882	13,176	2.28%	14,527	14,821	2.02%
	Arm D - M1 Off Slip	2,462	2,514	2.12%	2,787	2,840	1.88%
J15.2	Arm A - R122 (ENE)	12,864	13,158	2.28%	14,505	14,799	2.03%
	Arm B - M1 Off Slip	6,328	6,457	2.03%	7,143	7,272	1.80%
	Arm C - R122 (WSW)	6,566	6,676	1.68%	7,440	7,550	1.48%
	Arm D - M1 On Slip	2,657	2,712	2.06%	3,006	3,061	1.82%
Site Access 1	Arm A - Ring road	-	3,344	N/A	-	3,344	N/A

Junction No.	Arm	YoO 2027			YoO+15 2042		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)	Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
	Arm B - Boulevard Road	-	3,080	N/A	-	3,080	N/A
	Arm C - Link Road	-	2,630	N/A	-	2,630	N/A
Site Access 2	Arm A - Ring Road (N)	-	1,815	N/A	-	1,815	N/A
	Arm B - Hamlet Lane (E)	-	1,897	N/A	-	1,897	N/A
	Arm C - Ring Road (S)	-	2,991	N/A	-	2,991	N/A
	Arm D - Hamlet Lane (W)	-	778	N/A	-	778	N/A
Site Access 3	Arm A - Flemington Lane	-	337	N/A	-	337	N/A
	Arm B - Ring Road	-	674	N/A	-	674	N/A
	Arm C - Flemington Lane (W)	-	337	N/A	-	337	N/A

As Table 11.9 indicates, the junctions with the highest % impact are located to the south of the Flemington South LRD site which would reflect the distribution of the majority of the development traffic in this general direction. The following summary of the impact assessment is noted.

- Junction 1, the main impact is noted on the R122 (Arm C). This junction enables access/ egress into/ from the proposed Flemington South LRD and the % impact is not unexpected.
- Some arms of Junctions 2 and 3 indicate negative % impact. This is because some of the background traffic at these junctions has been redistributed to reflect the changed road network in the Do Something due to the opening of the southern section of the C-Ring Road.
- The % impact at the majority of junctions arms is less than 5% (e.g. junctions 4-11 and 13-15). Arm D of Junction 12 is noted to indicate a % impact of ca.6% with the junction's 3 other arms indicating a % impact less than 5%.
- The 3 Site Access junctions are new junctions which are not present in the Do Minimum scenario hence no % impact is provided. These junctions have been designed to accommodate the predicted level of future development traffic and provide spare capacity to accommodate future growth in background traffic (see modelling result in Section 11.7.4.4)

As demonstrated in Table 11.9, the predicted percentage impact is expected to be low to moderate across the local road network. Nevertheless, to ensure a robust impact assessment detailed modelling of a number of junctions listed in Table 11.9 was undertaken.

11.7.4.4 Detailed Junction Modelling

Detailed junction modelling of a number of the junctions outlined in Table 11.9 above was undertaken. The modelling assessment has utilised junction modelling software to develop, analyse and report the detailed assessment outcome. Depending on the type of junction control, either LinSig modelling software for a signal controlled junction or Junctions (ARCDY or PICADY module) modelling software for a non signal junction was utilised.

In line with best practice guidance, the modelling assessment considered the AM and PM peak hour hours. An outline of the modelling results is presented in Table 11.10 below with complete modelling results presented in Appendix F, Volume III of this EIAR. For easy of presentation, Table 11.10 provides the maximum Degree of Saturation (DoS) value for each signal junction or the maximum Ratio to Flow Capacity (RFC) value for each non signal junction modelled for the YoO and YoO+15 Do Something scenario.

Table 11.10: Do Something Outline Junction Modelling Results

Junct ion No.	Junction Type	YoO 2027		YoO+15 2042	
		DoS	RFC	DoS	RFC
J1	4 arm non-signal roundabout	N/A	0.57	N/A	0.65
J3	3 arm signal junction	71.3%	N/A	79.5%	N/A
J4	4 arm signal junction	90.8%	N/A	102.5%	N/A
J5	3 arm non-signal roundabout	N/A	0.52	N/A	0.57
J6	4 arm signal junction	82.1%	N/A	91.6%	N/A
J7	3 arm signal junction	84.1%	N/A	97.9%	N/A
J12	4 arm non signal junction	N/A	0.70	N/A	0.80
J15.1	3 arm non signal roundabout	N/A	1.13	N/A	1.29
J15.2	3 arm non signal junction	N/A	0.95	N/A	0.96
Site Access J1	3 arm signal junction	38.2%	N/A	38.7%	N/A
Site Access J2	4 arm signal junction	33.9%	N/A	33.9%	N/A
Site Access Junction 3	3 arm non signal junction	N/A	0.12	N/A	0.12

Junction modelling for J1 and J3, the two key junctions to the south of the site which provide access to the R122, have been shown to operate with spare capacity (i.e. DoS <90% or RFC <0.85) in the future years. In addition, J5, J12 and the three proposed Site Access Junctions (Boulevard Road, Hamlet Lane and Flemington Lane) have also been shown to operate with spare capacity in the future years. The modelling assessment of J4, J6 and J7 indicates potential congestion issues mainly in the AM peak hour on some individual junction arms whereas PM peak hour results at these 3 junctions generally indicate the junctions still have some spare capacity. J15.1 and 15.2 which are the M1 Interchange roundabouts (eastern and

western respectively) were also modelled due to their sensitive location – a robust approach as they did not require a detailed junction model based on predicted impacts. Other than potential congestion issues indicated on the M1 On Slip J15.1 and the M1 Off-Slip at J15.2, modelling indicated the other arms of the junction were operating ok.

To provide a robust assessment, the future traffic flows in the YoO, YoO+5 and YoO+15 future years do not include any allowance for the potential reduction in traffic demand due to a potential modal shift (as a result of the improved active travel infrastructure). As such, the modelling indicates the worse case traffic figures are likely to reduce in future due to travel behaviour change.

11.8 'WORST CASE' SCENARIO

The assessment has been prepared on the basis of a realistic worst-case scenario, as set out in the Do Something assessment scenario (Section 11.7.4).

11.8.1 CONSTRUCTION PHASE

The Do Something scenario assumes peak daily construction vehicle activity based on a 100% build-out and full occupation of the proposed development on year of opening (2027). The development shall be delivered in phases with the average construction vehicle activity levels being lower than assumed in the impact assessment. This approach ensures that the potential transport impacts are not underestimated and that the assessment captures the highest likely levels of traffic generation associated with the completed development for the year of opening (regardless of potential phasing of unit delivery). As a result of considering full development capacity from year of opening, the analysis provides a robust assessment for the local road network.

11.8.2 OPERATIONAL PHASE

The Do Something scenario assumes a 100% build-out and full occupation of the proposed development on YoO. It is also noted that future traffic flows in the YoO and YoO+15 future years do not include any allowance for the potential reduction in traffic demand due to a potential modal shift (as a result of the improved active travel infrastructure). This approach ensures that the potential transport impacts are not underestimated and that the assessment captures the highest likely levels of traffic generation associated with the completed development for the YoO (regardless of potential phasing of unit delivery). As a result, the impact assessment analysis provides a robust and realistic worst-case assessment for the local road network.

11.9 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

11.9.1 CONSTRUCTION PHASE

As noted a framework CTMP has been prepared by Transport Insights. This framework CTMP, including in the overall application package, is also presented in Appendix F, Volume III. The framework CTMP addresses likely human health risks and documents construction practices and measures that can be adopted to minimise any effects on road users during the proposed development's construction phase. The framework CTMP's overarching objectives are to:

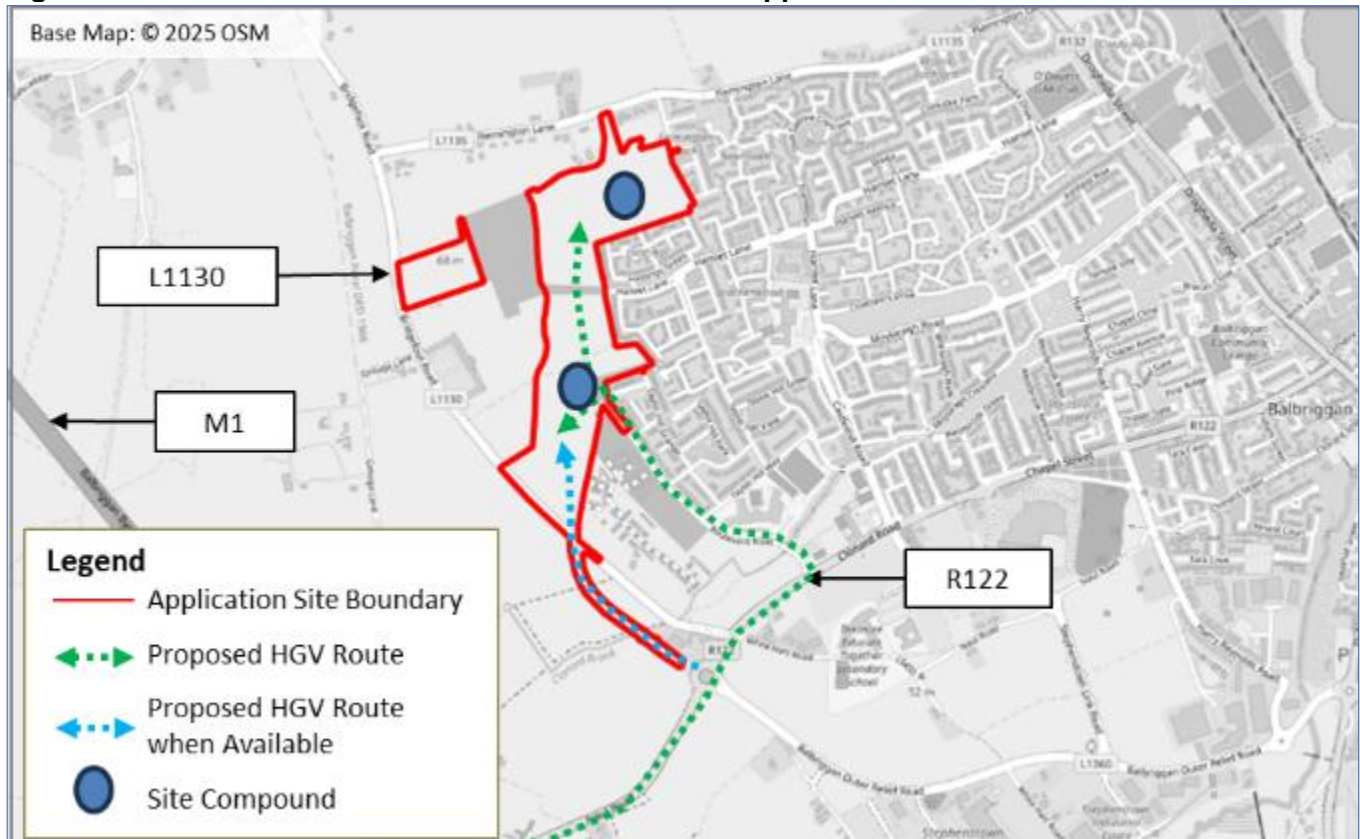
- mitigate likely construction traffic effects on nearby local roads by routing construction traffic along the regional and national road network, where possible;
- construction traffic movements will be scheduled to avoid school pick-up and drop-off times in order to minimise potential conflicts with school-related pedestrian and vehicular activity;

- avoid conflict between construction traffic activities and general traffic/ pedestrians/ cyclists in the general vicinity of the site; and
- set out appropriate construction staff car parking arrangements so as to avoid overspill car parking on the local road network and resulting potential for traffic hazards.

The Framework CTMP will be updated by the Contractor prior to commencement of development and it will include the mitigation measures set out in this EIAR.

In accordance with the CTMP, the set HGV haulage routes are to be strictly adhered to, as illustrated in Figure below unless otherwise agreed with FCC.

Figure 11.9: Construction Traffic Routes to/from The Application Site



Furthermore, the following actions will be undertaken in accordance with the framework CTMP:

- All construction staff parking will be accommodated in temporary parking areas within the site, which will have capacity for ca. 100 no. vehicles;
- A Construction Staff Mobility Management Plan (CSMMP) for the site will be developed by the contractor and implemented prior to construction works commencing;
- Just-in-time deliveries will be arranged where feasible;
- Construction materials will, where feasible, be sourced from local suppliers and manufactures, thus, limit likely effects of construction traffic;
- The site will operate from 07:00hrs to 19:00hrs on weekdays and from 07:00hrs to 14:00hrs on Saturday. No works will be undertaken on Sundays or Bank Holidays without the consent of FCC;
- A signage plan will be developed and implemented, providing advance warning of the construction access junction, and likelihood of slow-moving turning traffic to/ from the site;
- Compliance with the CTMP will form part of written contracts between the principal contractor and nominated sub-contractors;

- Methods of handling materials on site will be in accordance with construction site health and safety requirements;
- Where required, construction vehicles will be inspected prior to exit from the site to ensure that dirt is not spread onto the adjoining road, and systems shall be put in place to facilitate this process, including an on-site cleaning area and/ or rumble grid;
- The principal contractor will comply at all times with FCC requirements, including but not limited to hoarding/ scaffolding licences, skip licences etc; and
- The CTMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CTMP will be in accordance with FCC requirements.

A detailed Construction Environmental Management Plan (CEMP) will be prepared post-planning by the selected construction contractor expanding on the outline plan, and the document will be submitted for approval to FCC prior to the commencement of any construction works. The CEMP will include the mitigation contained in this EIAR including the Framework CTMP.

The CTMP will ensure that suitable temporary traffic works, and road safety measures are put in place during the construction phase. The plan will ensure that any required traffic management measures are put in place to minimise the impact on local road users. Construction related traffic will access/ egress the site via the R122 and Boulevard Road initially and then utilise the new C-Ring Road connection to the R122 roundabout when it becomes operational. In general, the impact of the construction period will be temporary in nature and will cease following completion of the works. No significant effects are likely to occur due to construction phase traffic.

The applicant will appoint a dedicated construction manager and construction traffic manager. The construction traffic manager will be required to coordinate and schedule all deliveries to the site, ensure that the access roads are kept clear of mud and debris, advise haulage contractors on the appropriate routes to and from the site, and to adhere to good traffic management principles. In this way, the likely effects of the construction phase can be appropriately managed. No significant effects are expected.

11.9.2 OPERATIONAL PHASE

Balbriggan provides suitable infrastructure and transport services to enable travel by sustainable modes. In addition, proposed active travel and public transport improvements planned for Balbriggan shall help to enable sustainable mode choices. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car.

To encourage sustainable transport use and help reduce potential traffic impacts, a Framework MMP has been prepared by Transport Insights and is included within the overall application package. The MMP will implement the mitigation measures set out in this EIAR.

11.8.2.1 MMP Objectives and Measures

Considering the site's accessible location, multiple employment and educational destinations within its walking, cycling, and public transport catchment and access to public transport services, the overarching objectives of the MMP are to:

- promote sustainable travel choices (walking, cycling and public transport); and
- support car-free lifestyle among residents and visitors of the development.

To achieve the mode share targets in the MMP, the following actions will be undertaken:

- Appointment of a Residential Travel Plan Co-Ordinator (MMPC);
- Promotion of the public transport TaxSaver scheme and Cycle to Work scheme;

- Promote a sustainable alternative to private car ownership through provision of a number of car share bays, located adjacent proposed apartment blocks;
- Provision of secure cycle parking for standard and non standard type bicycles across the development to serve future residents, visitors and users of the commercial, community and creche amenities;
- Promotion of walking as active travel in residents Sustainable Transport Information Pack; and
- Incentivising Active Commuters.

The Framework document sets out a clear set of objectives and identifies measures to help achieve the stated objectives, as well as appropriate monitoring and marketing techniques. Following occupation of the site and appointment of an MMPC, it is recommended that the Action Plan included in the MMP be further developed. The Action Plan will remain a 'living' document thereafter and should be updated periodically.

11.10 CUMULATIVE IMPACT ASSESSMENT

11.10.1 IDENTIFIED RELEVANT COMMITTED DEVELOPMENTS

With the objective of assessing the cumulative impacts of the potential traffic that could arise from permitted and committed development schemes in the local area, the impact assessment has incorporated two schemes. This is in addition to growth factors applied to base traffic flows which have also been incorporated into the analysis in Section 11.7.4. Such an approach ensures the cumulative impact of potential additional vehicular movements as a result of the implementation of both the subject proposals and the permitted and committed developments have been considered in the impact assessment and detailed junction performance analysis.

Of the various committed developments outlined in Table 11.1, the Ladywell developments and the Flemington Lane development have been identified as developments which could potentially generate an impact upon the local road network beyond that captured by the future background traffic growth assumptions. The identified developments are presented in table 11.11 with commentary provided regarding their consideration in this EIAR chapter.

Table 11.11: Relevant Committed and Proposed Developments

No.	Reg. Ref.	Name	Location	Comments
1	FCC LRD0048/S3E & ABP-321437-24	Ladywell Developments	Lands to the south	The scheme has been accounted for in the Do-Minimum development scenario, as committed development, and as such any cumulative impacts have been reflected in the analysis presented in this chapter.
2	FCC: F22A/0670	Ladywell Developments	Lands to the south	The scheme has been accounted for in the Do-Minimum development scenario, as committed development, and as such any cumulative impacts have been reflected in the analysis presented in this chapter.
3	LRD0006/S3	Flemington Lane	Application Lands	As the current proposed development will augment and replace this permitted development, any cumulative impacts have been reflected in the analysis presented in this chapter.

As presented in the table above, the Flemington Lane and Ladywell development residential schemes have been deemed to generate excess traffic beyond the assumed background traffic growth factors, and therefore they have been accounted for in the analysis included herein.

11.11 MONITORING

11.11.1 CONSTRUCTION PHASE

During the construction stage the following monitoring exercises will be carried out. The specific compliance exercises to be undertaken in regard to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions, and
- Timings of construction activities.

The CTMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CTMP will be in accordance with FCC requirements.

11.11.2 OPERATIONAL PHASE

It is important to monitor and update the MMP to ensure the actions are being implemented and that action is sustained over time. It also provides an opportunity for the effectiveness of actions to be assessed, and if required, new actions identified. The following steps are recommended to monitor progress:

- Informed by a residents and visitors travel survey, the MMP should be updated within 3 months of occupation of the full site; and the Action Plan tailored to meet the specific requirements of its residents and visitors.
- A resident and visitor travel survey should be carried out biannually thereafter, forming the baseline from which the MMP's future performance is measured and additional/ amended interventions identified.
- A review of the actions carried out or due should be carried out by the MMPC every six months. This should take the form of a memo to the scheme's management company, documenting actions implemented, residents' feedback etc.

11.12 REINSTATEMENT

Any works on public property will be carried out with the minimum of inconvenience to the public and shall be reinstated in accordance with the requirements of Fingal County Council.

11.13 INTERACTIONS

The analysis contained within this chapter interacts with human health, biodiversity, water, noise and vibration, visual, contained within this EIAR. This is primarily due to the potential for an increase in traffic movements on the surrounding road network during the construction and operational phases due to the proposed development.

11.14 DIFFICULTIES ENCOUNTERED IN COMPILING

The main difficulty encountered in preparing this chapter was the availability and consistency of traffic flow related data. Up-to-date traffic counts were unavailable, so traffic surveys were commissioned by the application team to collect the required data from the local road network.

11.15 REFERENCES

- Traffic & Transport Assessment Report (ABP Reg. Ref. ABP-319343-24), prepared by MPA Consulting Engineers, dated September 2021.
- Traffic and Transport Assessment and Mobility Management Plan Report (ABP Reg. Ref. ABP LH06F-321437-24), prepared by Transport Insights, dated August 2024;
- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017);
- Sustainable Urban Housing: Design Standards for New Apartments (July 2023);
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (January 2024)
- Fingal Development Plan 2023-2029;
- Transport Infrastructure Ireland (TII) (2014) Traffic and Transport Assessment Guidelines;
- Transport Infrastructure Ireland (TII) Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts (October 2016);
- Transport Infrastructure Ireland (TII) Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021); and
- Design Manual for Urban Roads and Streets (DMURS) (May 2019).
- National Transport Authority Cycle Design Manual (September 2024).

12.0 MATERIAL ASSETS - WASTE

12.1 INTRODUCTION

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU (including 3.1(d)) as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2022).

This chapter has also been prepared to address the issues associated with waste management during the construction and operational phases of the proposed development as described in Chapter 2 (Description of Proposed Development).

A site-specific Resource Waste Management Plan (RWMP) will be prepared by AWN Consulting Ltd to deal with waste generation during the excavation and construction phase of the proposed development and will be included as Volume III of the EIAR Appendix E (Appendix 12.1). The RWMP will be prepared in accordance with the Environmental Protection Agency's (EPA) document *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021).

A separate Operational Waste Management Plan (OWMP) will also be prepared by AWN Consulting Ltd for the operational phase of the proposed development and will be included in Volume III of the EIAR Appendix E (Appendix 12.2) of this chapter.

The Chapter will be prepared in accordance with European Commissions Guidelines, *Guidance on the preparation of the Environmental Impact Assessment Report* (2017), the EPA *Guidelines on the Information to be contained in EIAR* (2022).

These documents will ensure the management of wastes arising at the development site in accordance with legislative requirements and best practice standards.

12.1.1 STATEMENT OF AUTHORITY

This chapter was completed by Chonaill Bradley (Bsc ENV, PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill Bradley is an Associate in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over 10 years' experience in the environmental consultancy sector and specialises in sustainability, resource and waste management.

12.2 STUDY METHODOLOGY

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management, including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This Chapter is based on the proposed development, as described in Chapter 3 of this EIAR (Description of Project) and considers the following aspects:

-
- Legislative context;
- Construction phase (including site preparation and excavation works);
- Operational phase; and

- Reinstatement Phase
-

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development will be calculated and included in section 12.4 of this Chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and the National Waste Statistics.

Mitigation measures will be proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information will be presented in Section 12.6

A detailed review of the existing ground conditions on a regional, local and site-specific scale will be presented in Chapter 5 of this EIAR (Land and Soils).

12.2.1 LEGISLATION AND GUIDANCE

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) as amended which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 12.1).

Figure 12.1: Waste Hierarchy



(Source: European Commission)

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 12.2).

Figure 12.2: Circular Economy



(Source: Repak)

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy (WAPCE) – *Waste Management Policy in Ireland*, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, *A Resource Opportunity*, in 2012.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for

Construction & Demolition Projects' (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006) and *Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers* (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including:

- The National Waste Management Plan for a Circular Economy 2024 – 2030 (NWMPCE) (2024),
- BS 5906:2005 Waste Management in Buildings – Code of Practice,
- Fingal County Council (FCC) 'Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws' (2020),
- EPA National Waste Database Reports 1998 – 2020, and
- The Circular Economy and National Waste Database Report 2021-2022 (2024) and the EPA National Waste Statistics Web Resource.

12.2.2 TERMINOLOGY

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows: -

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

- a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
- b) the adverse impacts of the generated waste on the environment and human health; or
- c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

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12.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

In terms of waste management, the receiving environment is largely defined by FCC as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the NWMPCE 2024 – 2030 and the Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland.

The waste management plans set out the following targets for waste management in the region:

- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Waste Management Planning Offices have issued a National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE) in March 2024, which supersedes the Eastern midlands regional (EMR) waste management plan and the two other regional waste management plans. The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The *Fingal Development Plan 2023 – 2029* sets out the objectives for the FCC area which reflect those set out in the regional waste management plan and will be presented in Volume III of the EIAR Appendix E (Appendix 12.1 and 12.2).

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR Waste Region, Ireland and Northern Ireland for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, municipal waste landfills, material recovery facilities and waste transfer stations.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which will be more beneficial from an environmental perspective.

A non-exhaustive list of licensed waste facilities within the FCC region has been included in Volume III of the EIAR Appendix E (Appendix A of Appendix 12.1). The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

A full description of the proposed Development can be found in Chapter 3 (Description of Proposed Development). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

12.4 DO NOTHING SCENARIO

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no demolition, excavation or construction at this site. There would continue to be no operational waste generated from the proposed site. There would, therefore, be a neutral effect on the environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional

policies, which can be found in Volume III of the EIAR Appendix E (appendix 12.1 and appendix 12.2), and therefore the likely significant effects would be similar to this proposal.

12.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development located at a site off Flemington Lane, within the townlands of 'Clonard or Folkstown Great', and 'Flemingtown', Balbriggan, Co. Dublin. Will primarily consist of the construction of 815 no. dwellings (610 no. houses, 194 apartments & 11 no. later living dwellings), a portion of the C-Ring Road, open space, community building/retail floorspace and 2 no. creches on an overall site area of 24.91 hectares.

A full description of the proposed Development can be found in Chapter 3 (Description of Proposed Development). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

12.5.1 DEMOLITION PHASE

There will be waste materials generated from the demolition of the existing residential building and agricultural outbuilding on site, as well as from the further excavation of the building foundations.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Volume III of the EIAR Appendix E (Appendix 12.1). The RWMP provides an estimate of the main waste types likely to be generated during the C&D phase of the Proposed Development. The reuse, recycling / recovery and disposal rates for the demolition phase have been estimated using the EPA National Waste Reports and these are summarised in Table 12.1.

Table 12.1: Estimated off-site reuse, recycle and disposal rates for demolition waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	0.9	0	0.0	85	0.8	15	0.1
Concrete, Bricks, Tiles, Ceramics	47.1	85	40.1	5	2.4	10	4.7
Plasterboard	3.7	30	1.1	60	2.2	10	0.4
Asphalts	0.9	25	0.2	70	0.6	5	0.0
Metals	13.9	5	0.7	80	11.1	15	2.1
Slate	7.4	0	0.0	85	6.3	15	1.1
Timber	11.1	10	1.1	60	6.7	30	3.3
Total	85.0		43.2		30.0		11.8

12.5.2 CONSTRUCTION PHASE

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be soil, stones and clay excavated to facilitate construction of new foundations, underground services, and the installation of the proposed basements. The development engineers (Paul Mc Grail Civil & Structural Engineers) have estimated that c. 75,038m³ of material will need to be excavated to do so. It is currently envisaged that c. 19,507m³ excavated material will be able to be retained and reused onsite for landscaping and fill. The remaining c. 55,531m³ of excavated material will need to be removed offsite for appropriate offsite reuse, recovery, recycling and / or disposal.

If any material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (previously Article 27 of the European Communities (Waste Directive)). For more information in relation to the envisaged management of by-products, refer to the RWMP Volume III of the EIAR Appendix E (Appendix 12.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018).

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP Volume III of the EIAR Appendix E (Appendix 12.1). The RWMP provides an estimate (of the main waste types likely to be generated during the Construction phase of the proposed development. These are summarised in Table 12.2.

Table 12.2: Estimated off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	1290.6	10	129.1	80	1032.5	10	129.1
Timber	1095.0	40	438.0	55	602.3	5	54.8
Plasterboard	391.1	30	117.3	60	234.6	10	39.1
Metals	312.9	5	15.6	90	281.6	5	15.6
Concrete	117.3	30	35.2	65	76.3	5	5.9
Other	586.6	20	117.3	60	352.0	20	117.3
Total	3793.5		852.6		2579.2		361.8

12.5.3 OPERATIONAL PHASE

As noted in Section 12.1, an OWMP has been prepared for the development and is included as Volume III of the EIAR Appendix E (Appendix 12.2). The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the building during the operational phase including dry mixed recyclables, organic waste and mixed non-recyclable waste as well as providing a strategy for management of waste glass, batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the development for the main waste types based on the AWN waste generation model is presented in Table 12.3 below and is based on the uses and areas as advised by the project architects (Plus Architecture). Further breakdowns can be found within Volume III of the EIAR Appendix E (Appendix 12.2 OWMP).

Table 12.3: Estimated waste generation for the proposed development for the main waste types

Waste Type	Waste Volume m3 per week	
	Residential	Commercial
Organic Waste	13.87	0.31
DMR	98.29	7.92
Glass	2.68	0.12
MNR	51.69	3.80
Total	166.53	12.15

The residents and commercial tenants will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. As required, the residents and tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Area (WSA). All WSA's can be viewed on the plans submitted with the application and in the OWMP Volume III of the EIAR Appendix E (Appendix 12.2).

The OWMP seeks to ensure the development contributes to the targets outlined in the NWMPCE and the FCC waste Bye-laws.

12.6 POTENTIAL IMPACTS/EFFECTS OF THE PROPOSED DEVELOPMENT

12.6.1 CONSTRUCTION PHASE

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during site demolition, excavation and construction Volume III of the EIAR Appendix E (see appendix 12.1) for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by demolition and construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect long-term, significant and negative**.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect short-term, significant and negative**.

There is a quantity of topsoil and subsoil will need to be excavated to facilitate the proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale is presented in Chapter 5 Land and Soils. Excavated material that cannot be reused onsite will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of

mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative**.

12.6.2 OPERATIONAL PHASE

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative**.

It is anticipated that Waste contractors will be required to service the proposed development on a scheduled basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative**.

12.7 'WORST CASE' SCENARIO

In a worst-case scenario, if no mitigation measures found in section 12.6 or in Volume III of the EIAR Appendix E (Appendixes 12.1 and 12.2) are followed, lack of waste prevention, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution as shown in section 12.5.

12.8 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concepts of the '*waste hierarchy*' and '*circular economy*' are employed when considering all mitigation measures.

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. A circular economy is a model of resource production and consumption in any economy that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible.

12.8.1 CONSTRUCTION PHASE

The following mitigation measures will be implemented during the construction phase of the proposed development:

Waste Management (WM)_1:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Volume III of the EIAR Appendix E (Appendix 12.1). The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction stages of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP Volume III of the EIAR Appendix E (Appendix 12.1) in agreement with FCC and in compliance with any planning conditions, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed demolition, excavation and construction stages.

Waste Management (WM)_2:

- A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Development Engineers have estimated that the majority excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

Waste Management (WM)_3:

- Building materials will be chosen to '*design out waste*'.

Waste Management (WM)_4:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
 - Concrete rubble (including ceramics, tiles and bricks);
 - Soil and stones;
 - Concrete, bricks, tiles and ceramics;
 - Wood, glass and plastics;
 - Metals;
 - Gypsum-based construction material;
 - Paper and cardboard;
 - Mixed construction and demolition (C&D) waste;
 - Chemicals (solvents, paints, adhesives, detergents etc.).
 - WM_5:
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible (alternatively, the waste will be sorted for recycling, recovery or disposal).

Waste Management (WM)_6:

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.

Waste Management (WM)_7:

- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).

Waste Management (WM)_8:

- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.

Waste Management (WM)_9:

- All construction staff will be provided with training regarding the waste management procedures.

Waste Management (WM)_10:

- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal.

Waste Management (WM)_11:

- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.

Waste Management (WM)_12:

- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Waste Management (WM)_13:

- Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction stage of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWCPE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

12.8.2 OPERATIONAL PHASE

The following mitigation measures will be implemented during the operational phase of the proposed development:

Waste Management (WM)_14:

- All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

Waste Management (WM)_15:

- As previously stated, a project specific OWMP has been prepared and is included as Volume III of the EIAR Appendix E (Appendix 12.2). The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE , Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the FCC waste bye-laws.
- The residents, tenants and facilities management of the site during the operational stage will be responsible for ensuring the ongoing implementation of this OWMP and the abiding of FCC waste bye-laws, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.

Waste Management (WM)_16:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
 - Organic waste;
 - Dry Mixed Recyclables;
 - Mixed Non-Recyclable Waste;
 - Glass;
 - Deposit return scheme
 - Waste electrical and electronic equipment (WEEE);
 - Batteries (non-hazardous and hazardous);
 - Cooking oil;
 - Light bulbs;
 - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
 - Furniture (and from time to time other bulky waste); and
 - Abandoned bicycles.

Waste Management (WM)_17:

- The residents, tenants and facilities management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.

Waste Management (WM)_18:

- The residents, tenants and facilities management will ensure that all waste collected from the site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and

Waste Management (WM)_19:

- The residents, tenants and facilities management will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, *The NWMPCE* and the FCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

12.9 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

12.9.1 CONSTRUCTION PHASE

A carefully planned approach to waste management as set out in Section 12.6.1 and adherence to the RWMP (which includes mitigation) Volume III of the EIAR Appendix E (Appendix 12.1) during the construction phase will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of prevention reuse, recycling and recovery is achieved, the predicted impact of the construction phase on the environment will be **short-term, imperceptible and neutral**.

12.9.2 OPERATIONAL PHASE

During the operational phase, a structured approach to waste management as set out in Section 12.6.2 and adherence to the OWMP (which includes mitigation) Volume III of the EIAR Appendix E (Appendix 12.2) will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be long-term, imperceptible and neutral.

12.10 MONITORING

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation. Monitoring proposals for the construction phase are summarised in Table 12.4.

The management of waste during the operational phase will be monitored by the Operator / Facilities Management to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s). Monitoring proposals for the operational phase are summarised in Table 12.4.

Table 12.4: Monitoring Proposals for the Construction Stage

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	An appointed Resource Manager will monitor all on-site waste segregation and classification

Table 12.5: Monitoring Proposals for the Operational Stage

Likely Significant Effect	Monitoring Proposals
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make available to FCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the operator / facilities management company

12.10.1 CONSTRUCTION PHASE

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the demolition, excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The mitigation measures in the RWMP specify the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

12.10.2 OPERATIONAL PHASE

During the operational phase, waste generation volumes will be monitored by residents against the predicted waste volumes outlined in the OWMP. There may be opportunities to reduce the number of bins and equipment required, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

12.11 REINSTATEMENT

In the event that the Proposed Development is discontinued, there is not likely to be any significant impacts on waste management at the site.

The Proposed Development may be decommissioned at some stage in the future. At that time, a demolition or refurbishment plan will be formulated for the decommissioning phase of the Proposed Development to ensure no waste nuisance occurs at nearby sensitive receptors.

12.12 CUMULATIVE IMPACT ASSESSMENT

A full list of developments considered for the cumulative impact during the construction and operational phase of the development can be found in chapter 17 (Cumulative Aspects). All relevant developments and their cumulative impacts have been considered for the construction and operational phases.

Due to the high number of waste contractors in the FCC area and the EMR, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all of the developments. As such the cumulative construction phase effect will be **short-term, not significant and neutral**.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with

waste generation and waste management. As such the cumulative operational phase effect will be **short-term, not significant** and **neutral**.

12.12.1 CONSTRUCTION PHASE

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such, the cumulative effect in terms of waste will be **short-term, imperceptible** and **neutral**.

12.12.2 OPERATIONAL PHASE

There are existing residential and commercial developments close by, along with the multiple permissions granted and remaining to be decided in the area. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely to improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible** and **neutral**.

12.13 INTERACTIONS

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

12.13.1 LAND AND SOILS

During the construction phase, excavated soil, stone and clay will be generated from the excavations required to facilitate site levelling, construction of new foundations and the installations of site services. It is envisaged that some of the excavated material will need to be removed off-site. When material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 12 (Material Assets (Waste)), Chapter 5 (Land and Soils) and the requirements of the RWMP Volume III of the EIAR Appendix E (Appendix 12.1), will ensure the effect is **long-term, imperceptible** and **neutral**.

12.13.2 MATERIAL ASSETS – TRAFFIC & TRANSPORTATION

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the Site during the construction and operational phases of the proposed development. The increase in vehicle movements as a result of waste generated during the construction phase will be *temporary* in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 11 (Material Assets (Transportation)). Provided the mitigation measures detailed in Chapter 11 and Chapter 12 are adhered to, the predicted effects are **short to long-term, imperceptible** and **neutral**.

12.13.3 POPULATION & HUMAN HEALTH

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated

potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and mitigation measures in Chapter 3 (Population & Human Health) and Chapter 12, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be **long-term, imperceptible and neutral**.

12.13.4 BIODIVERSITY

The potential impacts on biodiversity in relation to the generation of waste during the construction or operational phases are that the incorrect management of waste could result in littering, pollution issues or vermin in areas affected.

Adherence to the mitigation measures set out in this chapter (Chapter 12), RWMP Volume III of the EIAR Appendix E (Appendix 12.1), OWMP (Appendix 12.2) and in Chapter 4 (Biodiversity) will ensure the associated effect is **long-term, imperceptible and neutral**.

12.14 DIFFICULTIES ENCOUNTERED IN COMPILING

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) (included within the application documentation) process provides spot samples, and further testing may be required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There is a number of licensed, permitted and registered waste facilities in the Dublin region, in the surrounding counties, the eastern midlands waste region and in Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

As discussed there is large number of available waste facilities for this project to utilise. The materials used during the construction of this project will be standard construction materials and it is envisaged that there will be capacity to receive any waste materials generated by the development during the construction phase.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity, serviceability, and cost.

12.15 REFERENCES

- Waste Management Act 1996 as amended.

- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
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- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
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- European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
- Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
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13.0 MATERIAL ASSETS: SERVICES, INFRASTRUCTURE AND UTILITIES

13.1 INTRODUCTION

This Material Assets chapter relating to Services, Infrastructure and Utilities of the EIAR has been prepared by Paul Mc Grail Consulting Engineers.

Resources that are valued and that are intrinsic to specific places are called “*material assets*”. They may be either of human or natural origin, and the value may arise for either economic or cultural reasons.

This chapter is intended to deal with the physical resources in the environment which may be of either human or natural origin. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they are available for future generations, after the delivery of the proposed development. This chapter comprises an assessment of the likely impact of the proposed development on existing surface water, water supply, foul drainage, and utility services in the vicinity of the site as well as identifying proposed mitigation measure to minimise any impacts.

The material assets considered in this chapter of the EIAR include Surface Water Drainage, Foul Drainage, Water Supply, Power, Gas, Telecommunications and Waste. This Chapter should be read in conjunction with all relevant chapters of the EIAR.

13.1.1 AUTHOR INFORMATION AND COMPETENCY

This Chapter has been prepared by Paul McGrail, Managing Director of Paul McGrail Consulting Engineers, graduated from Bolton Street DIT in 1999. He worked for various Consulting Engineers on a variety of projects from Residential, Commercial, Food Industry and Conservation projects prior to setting up practice in 2009. Paul is a Chartered Engineer with Engineers Ireland and has completed two post grad courses in Project Management and Conservation in Trinity College Dublin.

13.1.2 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development subject of this application relates to the next phase of development by Glenveagh (and subsidiaries) “Phase 5” to be known as Flemington South LRD consisting of a residential development at Balbriggan Co Dublin. The proposed development comprises the construction of *inter alia* the following:

The development will consist of the construction of 815 no. dwellings (610 no. houses, 194 apartments & 11 no. later living dwellings), a portion of the C-Ring Road, open space, community building/retail floor space and 2 no. creches on an overall site area of 24.91 hectares.

A description of the proposed development is set out in chapter 2.

13.1.3 METHODOLOGY

The methodology used to prepare this section of the EIAR is in accordance with the EPA “Guidelines on the information to be contained in Environmental Impact Assessment Report May 2022” and EPA “Draft Advice notes for preparing environmental Impact Statements September 2015”.

These draft guidelines include information on the assessment of the effects of development on material assets and advises on the nature of the material assets which should be examined as part of the preparation of an EIAR.

The following sources have been used to collate information on built services within the general area of the site.

- Public Foul Drainage and Water Network system operated by Uisce Eireann.
- Review of Uisce Eireann utility plans (foul drainage and water supply).
- Review of Existing as built drawings.
- Submission of a Pre-Connection Enquiry Application to Irish Water.
- Review of ESB Networks Utility Plans.
- Review of Gas Networks Ireland Service Plans.
- Review of Eircom E-Maps.
- Review of Virgin Media Maps.

The information above has been supplemented by site inspections and surveys carried out as part of the construction of the previous phases 2, 3 & 4 by Glenveagh (as outlined in the cumulative section of this chapter). In addition, the scoping request response from Uisce Eireann has been taken in to account (see appendix B, Volume III of the EIAR).

The surface water design has been reviewed by Fingal County Council and any comments made have incorporated in the current design.

The following documents have been used in the design of the foul, watermain and surface water:

- Code of Practice for Wastewater Infrastructure (IW CDS 5030-03, 2025);
- Code of Practice for Water Infrastructure (IW CDS 5020-03, 2025);
- Sewers for adoption 8th Edition (August, 2018);
- CIRIA C753 The SUDS Manual (December, 2015);
- Greater Dublin Drainage Strategic (May, 2018).

13.1.4 DIFFICULTIES ENCOUNTERED

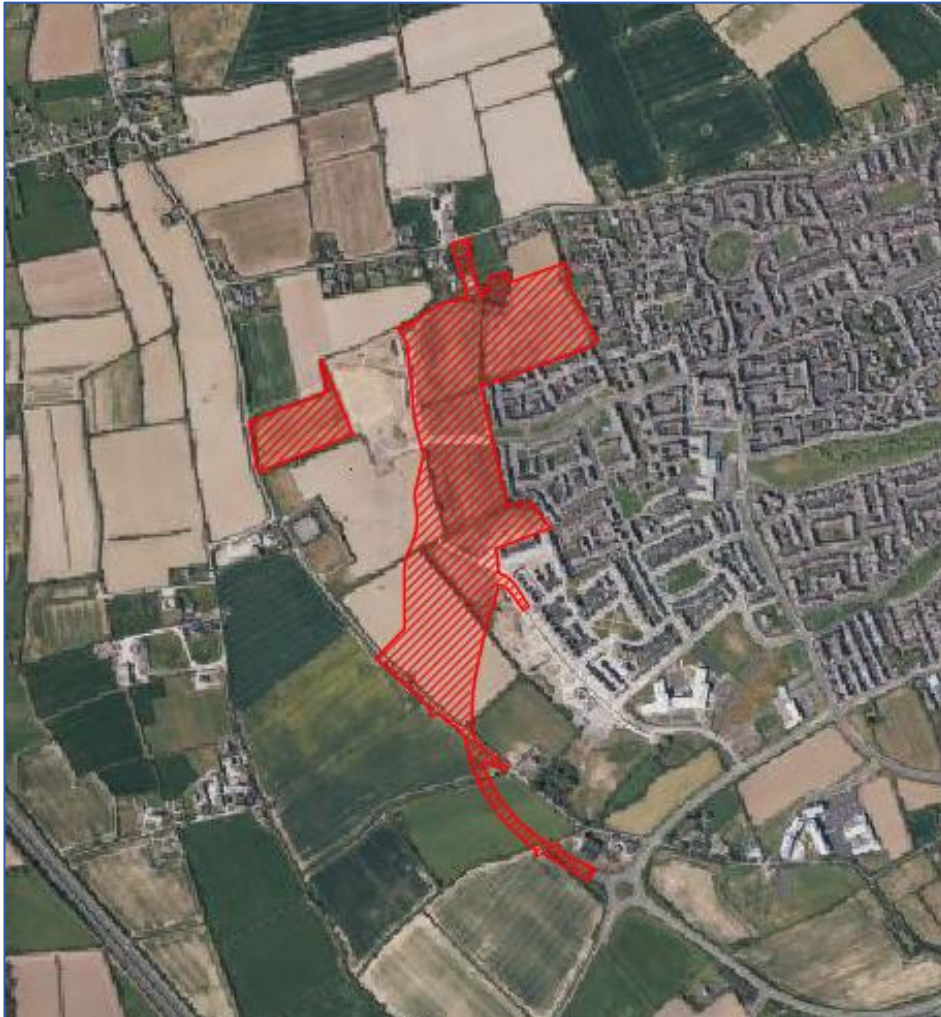
The exact location of the existing infrastructure is based on records provided by the relevant service providers. No significant difficulties were encountered in the preparation of this chapter of the EIAR. The exact location of the existing infrastructure is reliant upon the records obtained from the relevant service providers. Overall, no difficulties were encountered in preparing this chapter of the EIAR.

13.2 DESCRIPTION OF THE EXISTING ENVIRONMENT (BASELINE SCENARIO)

13.2.1 SITE DESCRIPTION

The site of the proposed development is currently a greenfield site. The land is bounded to the East and north (partially) by phase 3 under construction and to the west by Clonard Road. Refer to Figure 13.1 for Site Location.

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Figure 13.1: Site Location

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Source: Google Earth

13.2.2 OWNERSHIP AND ACCESS

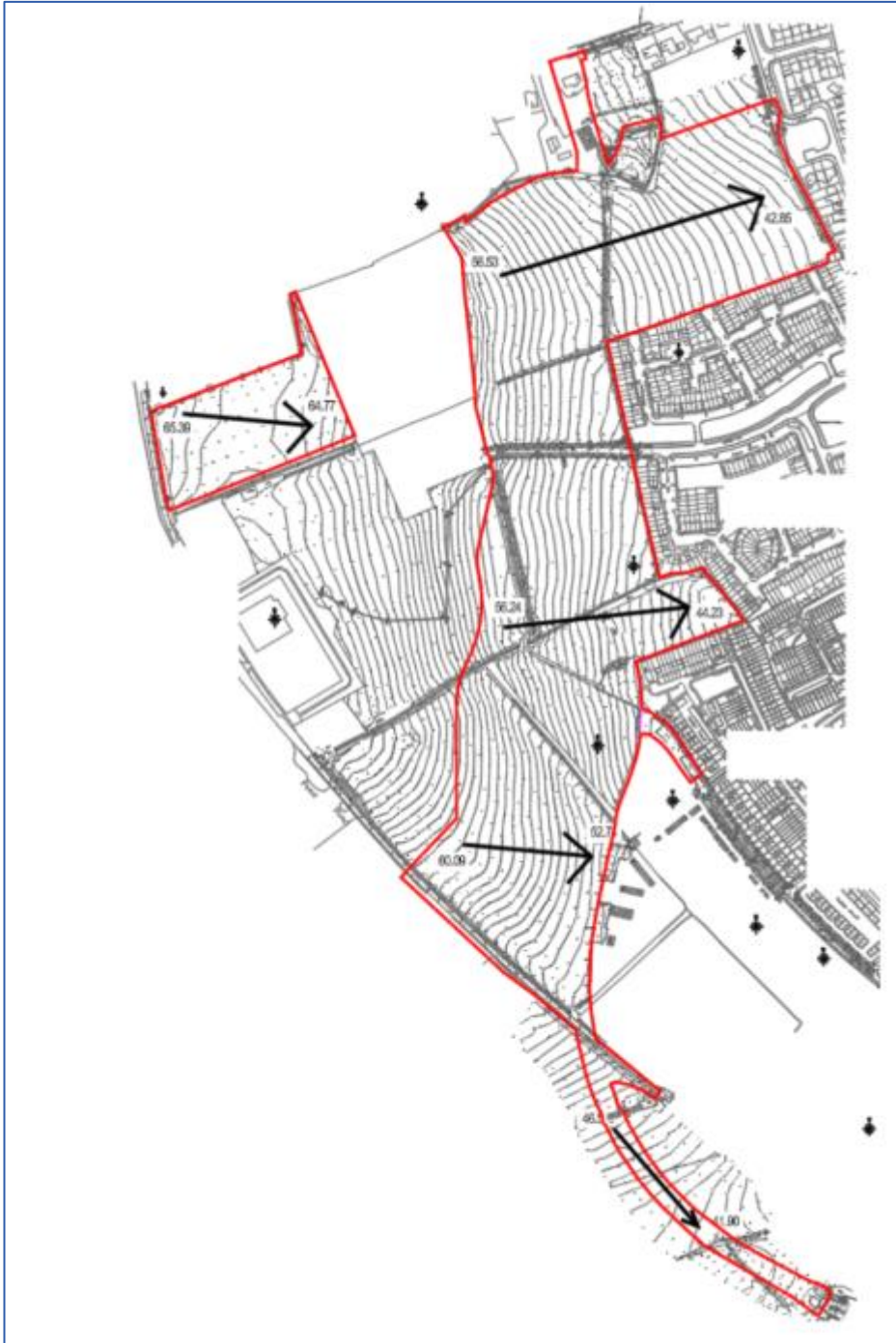
The majority of the subject lands are in the ownership of the applicant, Glenveagh Homes Limited. Some additional areas to facilitate the C-Ring road, and services within the red line boundary are under the ownership of Fingal County Council. A letter of consent is included with the application particulars.

Vehicular access and egress to the application site will be provided via the existing Boulevard Road and the existing Clonard Road and also via Flemington Lane and the new element of the C-Ring Road.

13.2.3 SURFACE WATER DRAINAGE

There is no existing surface water drainage network serving the site. Rainwater currently drains by means of direct infiltration and percolation into the underlying agricultural ground.

The local groundwater flow direction is expected to follow the natural topography and catchment drainage patterns. Greenfield runoff from the site flows in an easterly direction, as illustrated in Figure 13.2.

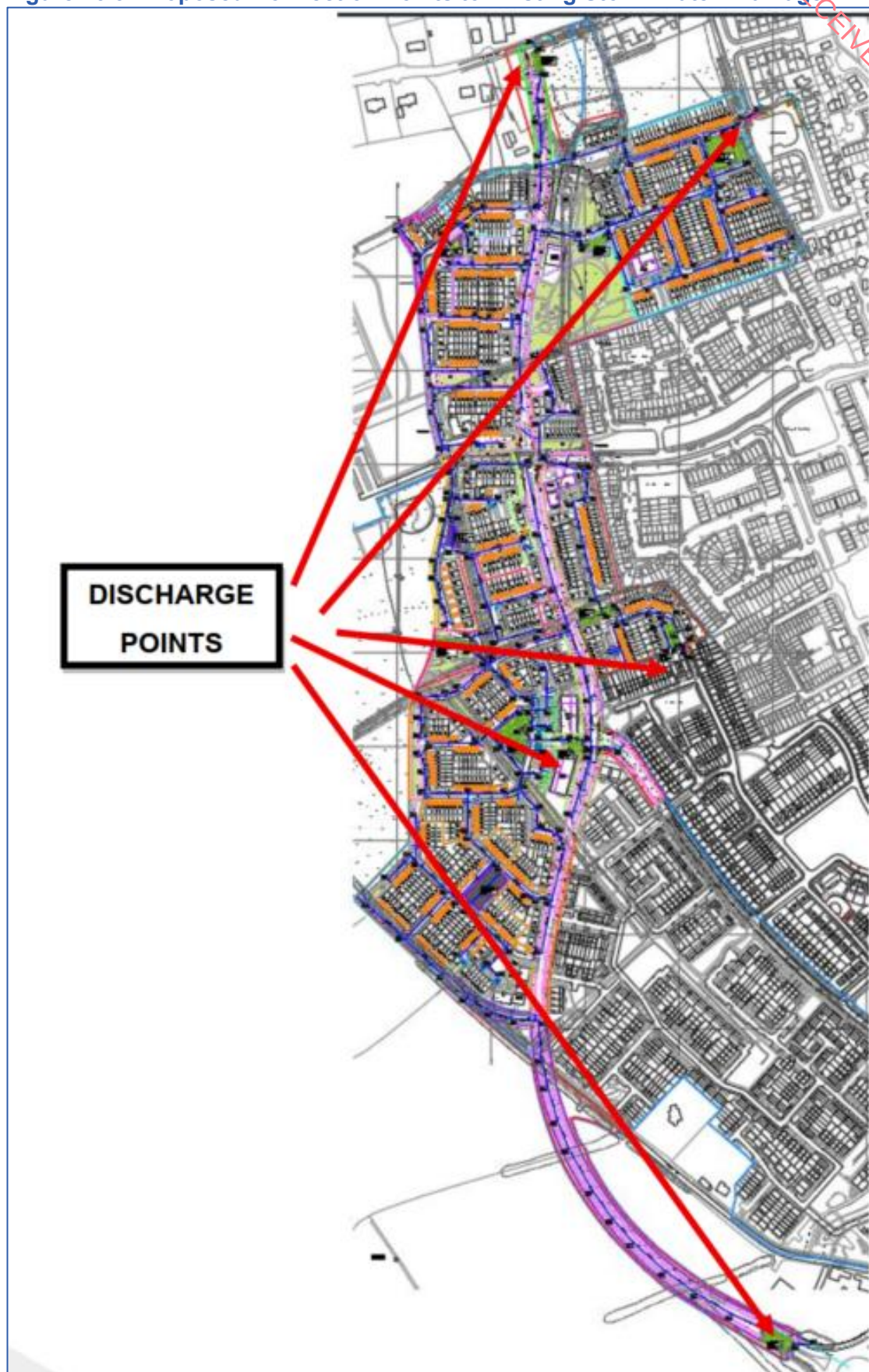
Figure 13.2: Topography of the Proposed Site

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It is proposed to discharge surface water from the site to five existing surface water pipes under the ownership of Fingal County Council, as illustrated in Figure 13.3.

The overall development will be delivered in 3 phases, as set out in Drawing no. A507-DCA-XX-XX-DR-A-041 - Proposed Site Layout – Phasing, prepared by DCA, included with the application. The site will be divided into five surface water catchments, each incorporating attenuation measures to ensure post-development runoff is restricted to the equivalent greenfield runoff rate.

Figure 13.3: Proposed Connection Points to Existing Storm Water Drainage

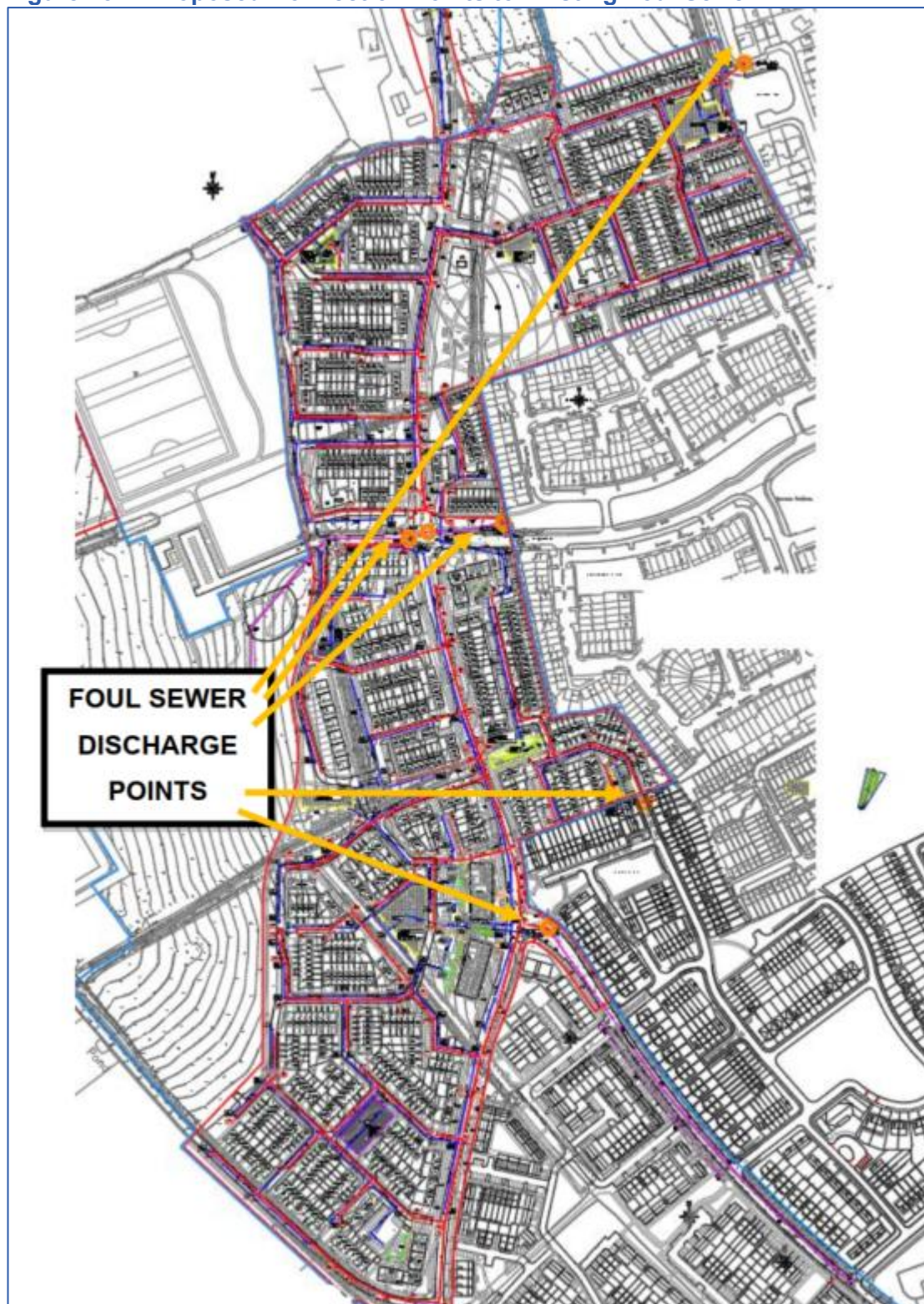


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13.2.4 FOUL WATER DESIGN

There are no records or evidence of any foul water infrastructure within the proposed site. Refer to Figure 13.4 below shows the proposed five foul sewer connection points to existing foul network surrounding the proposed development.

Figure 13.4: Proposed Connection Points to Existing Foul Sewer



13.2.5 WATERMAIN DESIGN

Irish Water/Uisce Éireann records confirm that existing public water supply infrastructure is present within and/or immediately adjoining the proposed development site. All design; construction and site layout proposals must ensure full protection, access and compliance with UE Codes of Practice and Standard Details.

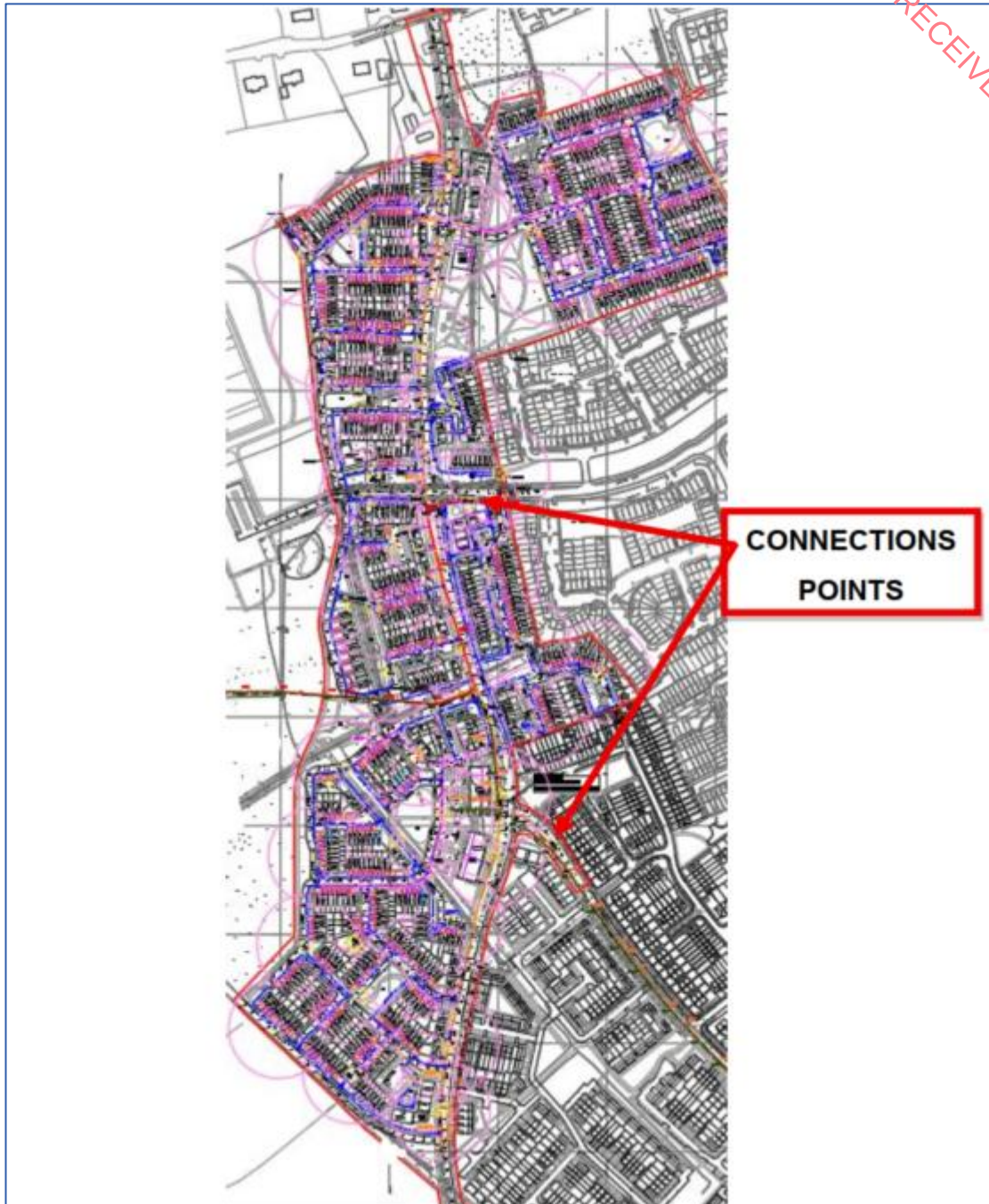
13.2.5.1 Connection Points

Connection to the public water network is feasible without requirement for Irish Water infrastructure upgrades, subject to the following:

- Primary Connection: A 200 mm ID connection to the existing 400 mm ductile iron (DI) watermain, including installation of a bulk meter and telemetry system.
- Secondary Connection: A 200 mm ID connection to the existing 300 mm DI watermain, with a control valve (normally closed).
- An on-site booster pump may be required to maintain adequate pressure.

Refer to Figure 13.5 below for the proposed connection points to the existing watermain around the proposed development.

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Figure 13.5: Proposed Connection Points to Existing Watermain

13.2.5.2 Diversions, Build-Near/Build-Over Requirements & Mitigation Measures

Uisce Éireann requires formal management of any works in proximity to existing watermains.

- Diversions and Build-Near/Build-Over Compliance

Drawings showing clearance distances, ground level changes and method statements must be included in the detailed design. All diversion/build-near queries must be submitted to the IW Diversion Team (diversions@water.ie).

- Required Mitigation Measures

Asset Protection Measures:

- Establish exclusion zones around identified watermains.
- Use hand-digging or vacuum excavation near proximity thresholds.
- Install temporary protective supports where required.

Structural & Ground Level Controls:

- Submit detailed method statements demonstrating no loading, settlement or vibration impact.
- Provide cross-sections showing ground level changes relative to existing assets.

Diversion Design (if required):

- Develop diversion layouts in accordance with UE Standard Details & Codes of Practice.
- Secure approval from the IW Diversion Team before works commence.

Operational Mitigation:

- Maintain service continuity during construction.
- Provide bypass arrangements if required.
- Install isolation valves and marker posts as per UE requirements.

Post-Construction Compliance:

- Provide as-built drawings, pressure testing and commissioning records.
- Ensure all materials and installation comply with UE specifications.

13.2.5.3 Compliance Statement

All watermain connection works, protection measures and diversion activities will comply with:

- Uisce Éireann Connections and Developer Services Standard Details & Codes of Practice
- IW Diversion Team requirements
- Technical stipulations of the Confirmation of Feasibility issued for the site

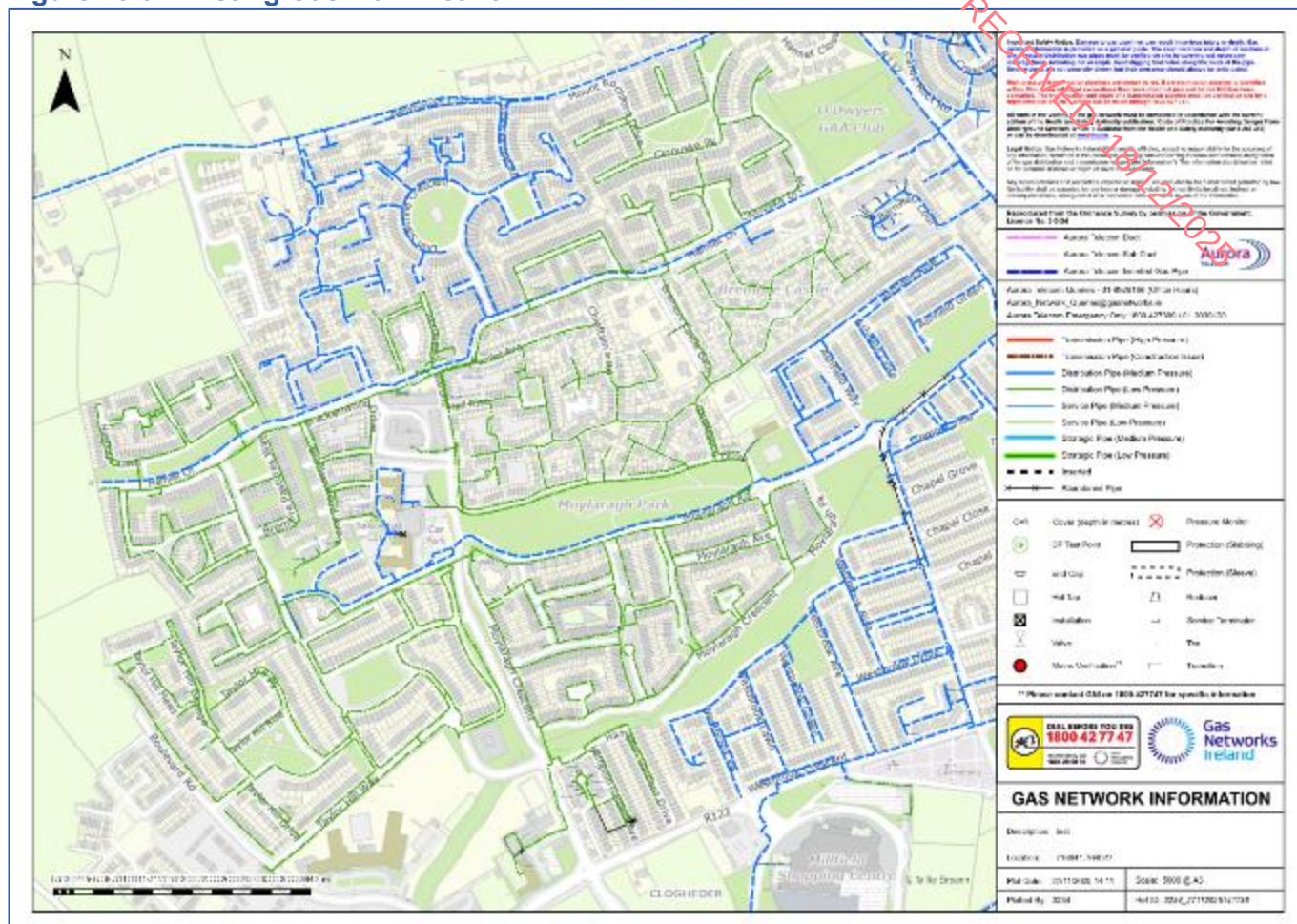
13.2.6 NATURAL GAS

There is no existing gas pipeline located on the subject site but there is Medium and Low-Pressure network located around the proposed development. Refer to Figure 13.6 below for the existing Gas Main Network.

No connections to the natural gas network will be required.

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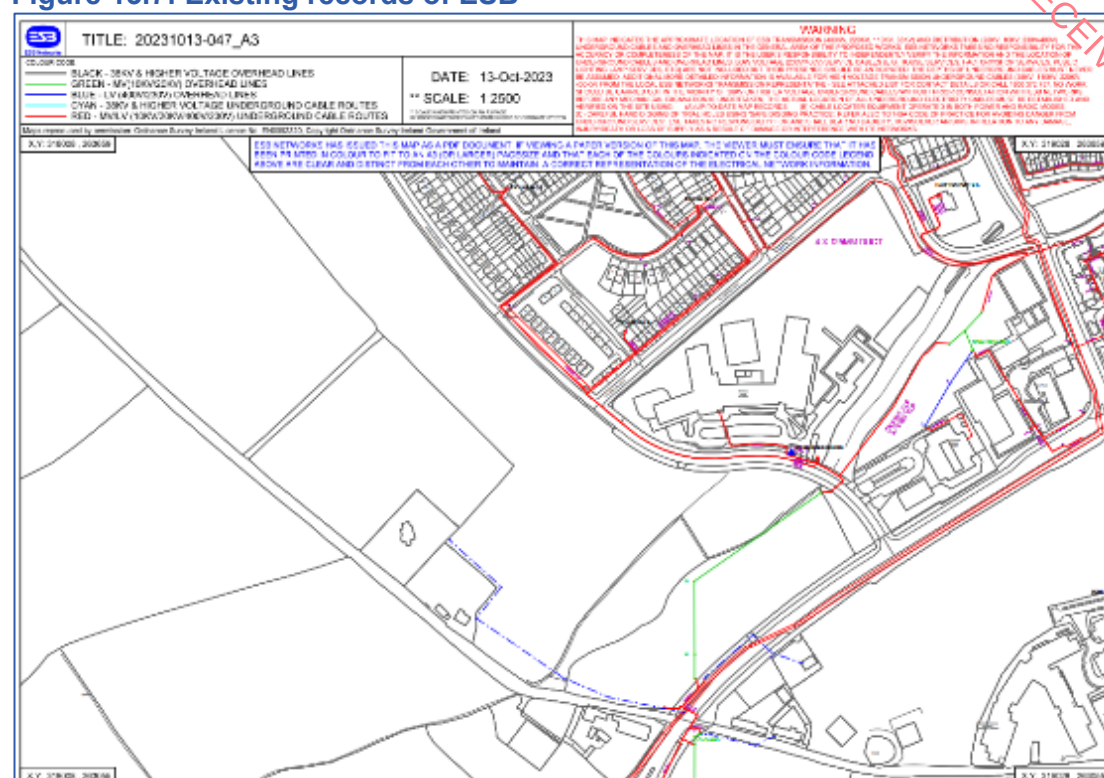
Figure 13.6: Existing Gas Main Network



13.2.7 ELECTRICITY SUPPLY

A new substation will be provided to serve this development. The proposed substation will provide power to a few mini pillars which will provide power to the residential dwellings. Refer to Figure 13.7 below for the existing records of ESB.

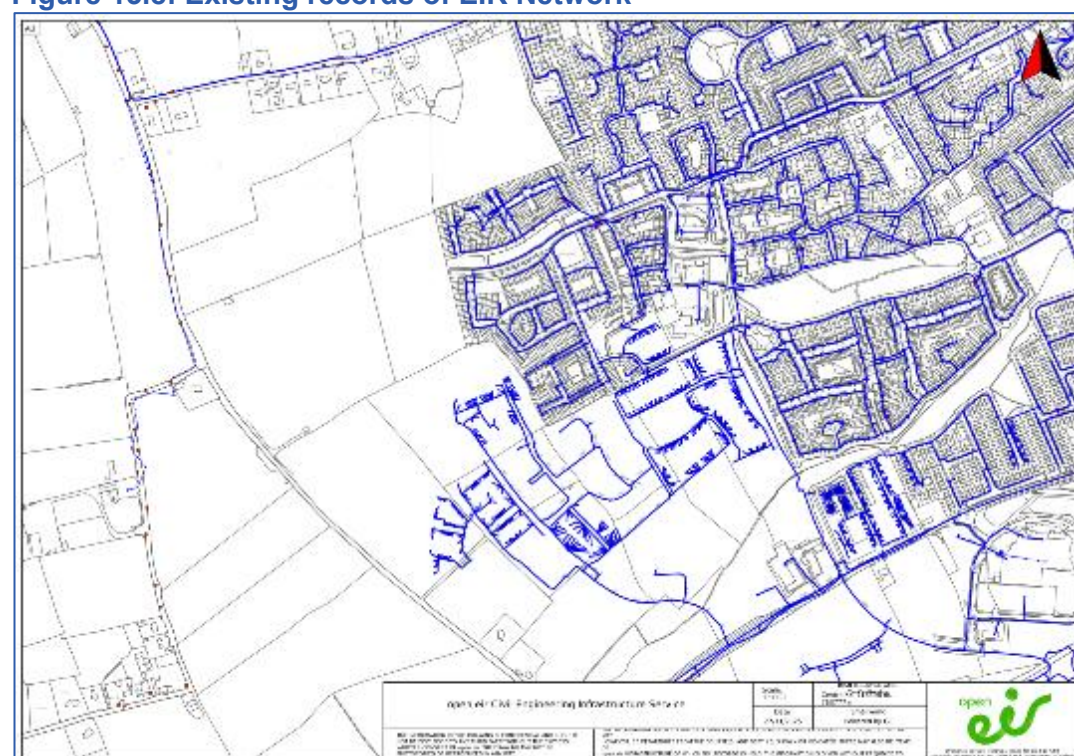
Figure 13.7: Existing records of ESB



13.2.8 COMMUNICATIONS

See below for the nearest communication network which is provided by EIR located around the proposed development. Refer to Figure 13.8 below for the existing EIR Network.

Figure 13.8: Existing records of EIR Network



13.2.9 WASTE

The site is a greenfield with no waste facilities. There are currently waste collectors collecting the waste from the dwellings to the East of the development and it is anticipated that during the operational phase a similar plan will be in place.

13.3 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

This EIAR Chapter refers to material assets - utilities as (attenuation, foul sewer, surface water), a portion of the C-Ring Road, as well as public open spaces for the project. A full description is provided in Chapter 2 of the EIAR and below, in conjunction with the detail provided in the relevant Paul McGrail drawings.

13.3.1 SURFACE WATER NETWORK

The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers (GDSDS). Following consultation with Fingal County Council, there will be provided a detention basin to provide surface water storage volume. The allowable flow rate has been set at the greenfield run off rate. Surface water run-off from the surface water catchment will be attenuated using a Hydrobrake on the surface water outlet from the catchment area.

It is proposed to use a sustainable urban drainage system (SuDS) approach to stormwater management throughout the site. The overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater. The proposed SUDs that feature in the development are modular permeable paving, swales, bioretention, detention basins, and Hydrobrake flow control.

The drainage network for the proposed development was modelled and tested against different critical storms using the standard catchment rainfall profiles from the Flood Studies Report (FSR) within the Causeway Software. A critical storm is considered as a level of rainfall intensity, and the greater the year of the return period, the higher the intensity of the storm.

For each return period tested, the following storm durations have been simulated, to assess against the length that a storm would release rainfall into the drainage network: 15min; 30min; 60min; 120min; 180min; 240min; 360min; 480min; 600min; 720min; 960min; 1440min; 2160min;(3 days)

The average ground slope is greater than 1%, therefore the pipe network has been designed for a 2-years return period. This is in accordance with section C5.1 of the Sewers for Adoption 8th Edition.

The modelling and calculation of the storm water network for this phase 5 development, we followed the same parameters, scheme and hydrological inputs and have increased the Cv value from 0.84 to 0.9, in accordance with Fingal County Council for the phase 4 LRD development permitted under LRD0048/S3E (ABP Ref: 321437-24) – Folkstown LRD.

As per section C5.2 of the “*Sewers for Adoption*” manual the chosen parameters and hydrological inputs for the design are as follows:

- Return period is 2 years;
- Design check carried out to ensure that no site flooding for 1:30 year return period plus 20% of Climate Change;
- Time of entry of taken as 4 mins as per Modified Rational Method;
- Annual Average Rainfall;
- M5-60: 16.8mm;
- Ratio: 0.331;
- Climate Change: 20%;

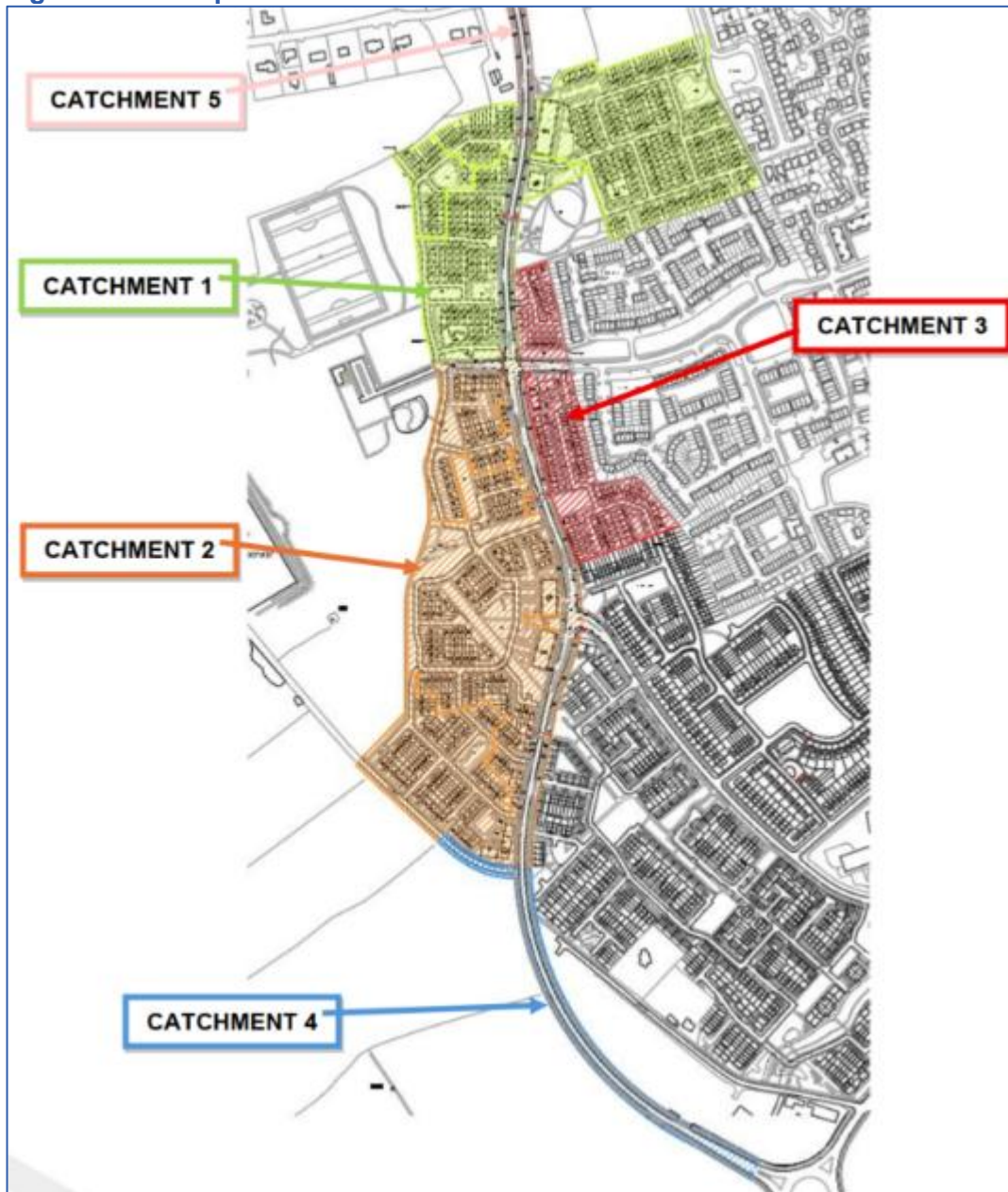
The calculations for the greenfield runoff of the above permissions used SOIL type 4 which refers to Soil index=0.47 (Institute of Hydrology Report No.124).

A ground investigation was carried out on the site, and the results have shown that the material encountered was cohesive clay and therefore it can be classified with soil index of 0.47.

Noting above, the same parameters were used to calculate the greenfield runoff from Balbriggan Phase 3 and 4, using the equation given on the IH Report No. 124. (See equation on Section 3.4 Surface Water Attenuation in the Engineering Services Report).

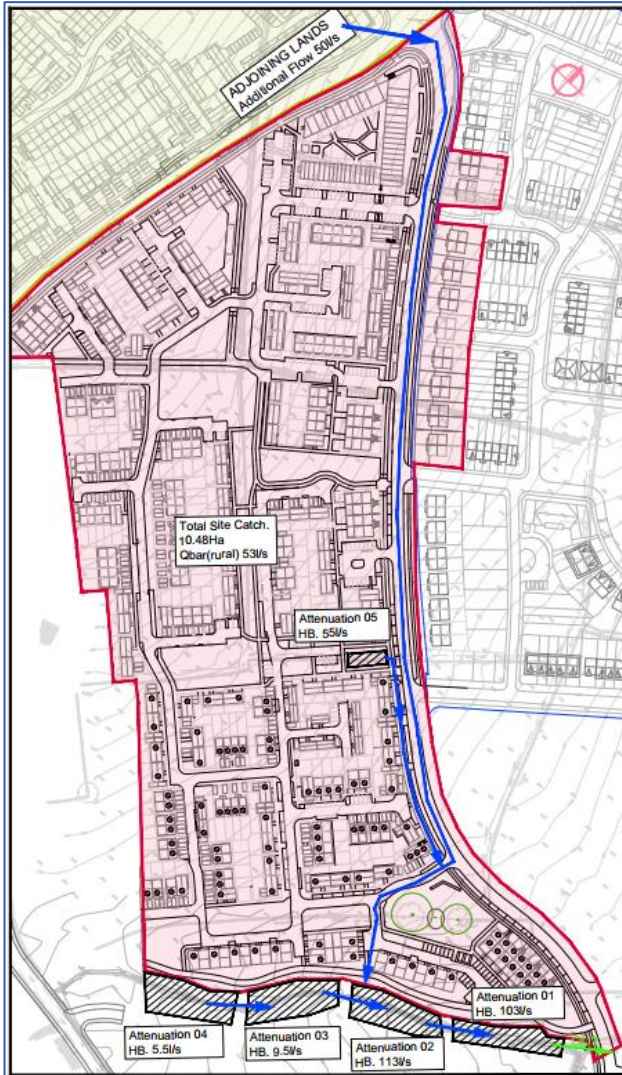
The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. The drainage network will consist in 5 no. of catchments attenuating to the green-field runoff at the hydrobrake located in the outfall manhole from each attenuation system. Refer to Figure 13.9 for Proposed Catchment Area.

Figure 13.9: Proposed Catchment Area



The last hydrobrake manhole has been allowed for the agreed 50l/s attenuated flow coming from the catchment 02, as part of the Planning application for Taylor Hill, Balbriggan, Phase 3 (F22A/0670). Refer to Figure 13.10 for Granted Catchment Area for Phase 3 with 50l/s allowed.

Figure 13.10: Granted Catchment Area for Phase 3 with 50l/s allowed



Utilizing the topography of the site and the levels, the Hydrobrakes have been adjusted to maximise the volume in each area. Refer to Table 13.2 below for Qbar values for each Hydrobrake.

Drawings "2024-122-050371 - Catchment Area" and "2024-122-(050361-050354) – Proposed SUDS Layout & Details" and "2024-122-(050311-050313) – Proposed Surface Water & Foul Sewer Layout" - See Engineering Services Report: Appendix A for Surface Water Network Calculations, prepared by Paul McGrail Consulting Engineers included with the application.

Surface water runoff from the development would be attenuated to greenfield runoff (Qbar), in accordance with the recommendations of the GSDS. Surface water run-off from each surface water catchment will be attenuated using a Hydrobrake on the surface water outlet from each catchment.

To protect the ground water, we have also introduced a number of petrol interceptor through the site, and this is addition to the SUDS mitigation index design [see section 3.8 Water Quality Management: Design Methods (Treatment Volume) in the Engineering Services Report].

Qbar is calculated using the Institute of Hydrology equation, as recommended in the Greater Dublin Strategic Drainage Study (GDSDS), as follows:

- $Qbar \text{ (rural)} = 0.00108 \times AREA^{0.89} \times SAAR^{1.17} \times Soil^{2.17}$
- AREA is the area of the catchment in km^2 . For a catchment area less than 50ha, calculate Qbar for 50 ha and pro rata it;
- SAAR = 829mm;
- SOIL = soil index 0.47
- Qbar: 5.590 l/sec/ha

Figure 13.11: Runoff Potential and Soil Classes

SOIL	SPR value (% runoff)
1	0.1
2	0.3
3	0.37
4	0.47
5	0.53

The calculated Qbar from the above calculation is 5.590 l/s/ha resulting in the total greenfield runoff of 138.467l/s. However, 3 no. of 5 catchments are discharging to an existing network we have designed the hydrobrakes as per the Qbar allowed on the existing network. The calculated Qbar above had resulting in a total greenfield runoff of 5.1l/s and 1.3l/s for Catchment 4 and 5.

Surface water runoff exceeding the allowable outflow rate for the catchment will be stored in detention basins for rainfall events ups to a 1 in 100-year return period as per Table 13.2 with an allowance for climate change of 20%.

Surface water storage volumes have been calculated using the Causeway software taking account of Qbar and the impermeable area of the surface water catchment. See Engineering Services Report – prepare by Paul McGrail Consulting Engineers (Appendix A) for results.

Table 13.1: Attenuation Contributing Area from Catchment

	Total Catchment Area (ha)	Impermeable Area (ha)	Impermeable Area (%)
01	7.637	3.883	50.85%
02	9.913	4.817	48.59%

03	2.335	0.970	41.54%
04	0.297	0.231	77.77%
05	1.047	0.881	83.60%

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Table 13.2: Attenuation Contributing Area from Catchment

Attenuation	Sub-Catchments Area [Ha]	Green Field Run-off (Q_{rural}) [l/s]	Top Water Level	Required Volume + 20%CC (m³)
01	4.510	30.0	40.448	1456.65
02	0.594	4.0	53.284	170.60
03	2.533	50.0	47.608	259.01
04	1.316	7.0	51.800	71.00
05	0.886	-----	51.612	563.25
06	1.554	3.0	46.660	315.08
07	0.778	3.0	43.983	267.60
08	4.394	10.0	51.612	1598.26
09	2.279	10.0	54.175	431.68
10	1.030	50.0	47.889	201.47
11	1.047	5.1	38.112	496.63
12	0.240	1.4	43.960	97.58

13.3.2 FOUL NETWORK

The foul water drainage system for the proposed development has been designed in accordance with the Irish Water Code of Practice and will be separate to the surface water drainage system. The foul water from the development will discharge via soil vent pipes within the buildings by gravity flow before connecting into the existing separate foul sewer network within the development. The foul sewerage for each house will have a separate connection to the proposed 225mm and 150mm diameter foul sewer along the road.

The existing pipes were checked for capacity using the following criteria. Pipes carrying foul sewage shall be designed to carry a peak flow of 6 times average foul sewage flow (6DWF). A roughness coefficient, k_s of 1.5mm is used for foul sewers. Foul drains are designed to achieve a minimum self-cleansing velocity of 0.75m/s when flowing half full.

Design Criteria

- Demand 446 l/dwelling/day
- Pipe Friction (K_s) 1.5 mm
- Minimum Velocity 0.75 m/s (self-cleansing velocity)

- Maximum Velocity 3.0 m/s (1:18 maximum pipe gradient)
- Frequency Factor 0.5 for domestic use

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Residential Dwellings

Wastewater Discharge Calculation

- Dry Weather Flow 446 l/dwelling/day
- No. of Dwellings 815
- Post Development Average Discharge 4.207 l/sec
- Post Development Peak Discharge (6x) 25.242 l/sec
- Daily Foul Discharge Volume (446l per dwelling) 363490 l

Non-Residential i.e. Creche

Wastewater Discharge Calculation

- Assumed Occupancy 250 persons
- Flow rate 50 l/person/day
- (Based on IW Code of Practice for Wastewater Infrastructure – Appendix C, Flow Rates for Design)
- Post Development Average Discharge (Based on 8-hour occupancy) 0.145 l/sec
- Post Development Peak Discharge (4.5x) 0.651 l/sec
- Daily Foul Discharge Volume 12500 l

A 150mm diameter sewer at a min gradient of 1:60 has been designed to cater up to 9 dwellings, and a 150mm diameter sewer at a min gradient 1:150 slope to cater 10 to 20 dwellings with no chance of any more house connecting. Pipes that cater more than 20 dwellings has been designed as 225mm diameter sewer at a min gradient of approximately 1:200.

150mm diameter sewer at a min gradient of approximately 1:60

Hydraulic performance with $k_s = 1.5$

Discharge capacity = 20.0 l/s (>11 l/s)

150mm diameter sewer at a min gradient of approximately 1:150

Hydraulic performance with $k_s = 1.5$

Discharge capacity = 12.6 l/s (>11 l/s)

225mm diameter sewer at a min gradient of approximately 1:200

Hydraulic performance with $k_s = 1.5$

Discharge capacity = 32.1 l/s (>11 l/s)

See Drawings "2024-122-(050311-050313) – Proposed Surface Water & Foul Sewer Layout" and "2024-122-(050331-050334) – Proposed Foul Sewer Longitudinal Sections.

A Pre-Connection Enquiry has been submitted to the Uisce Eireann Confirmation of Feasibility is included in this application.

13.3.3 WATERMAIN NETWORK

Following consultation with Uisce Éireann, the proposed watermain network has been designed in accordance with the Uisce Éireann Connection and Developer Services – ‘Code of Practice for Water Infrastructure’ and ‘Water Infrastructure Standard Details’.

13.3.3.1 Water Network Design Compliance

The proposed internal water distribution network has been designed to meet all Uisce Éireann technical requirements. Key elements include:

Service Connections

Individual houses will have their own connections to the distribution main via dedicated service connections and boundary boxes. All boundary boxes will comply with Uisce Éireann specifications and allow for future domestic meter installation.

Retention and Protection of Existing Uisce Éireann Assets

A detailed utility survey and targeted trial investigations (in consultation with Uisce Éireann) will confirm the exact location, depth, and alignment of existing public mains. Survey outputs will form part of the Services Report.

Compliance with Separation Distances

Minimum horizontal and vertical separation distances between proposed works and existing UÉ assets will be provided in accordance with UÉ Codes of Practice. No structures, retaining walls, or utilities will encroach on required access corridors.

No Build-Over Policy

In line with Uisce Éireann policy, no build-over of public assets will be permitted. Where separation requirements cannot be achieved, a formal Diversion Enquiry will be submitted to the UÉ Diversions Section (diversions@water.ie).

Mitigation and Asset Protection Measures

Where works occur near existing mains, the following will apply:

- Hand excavation or vacuum excavation within proximity thresholds
- Installation of protective slabs or bridging as required
- Establishment of construction exclusion zones
- Settlement, vibration and load management
- Method Statements agreed with Uisce Éireann

Maintaining Access for Operations & Maintenance

Existing assets will remain fully accessible during construction and operation. Landscaping, boundary treatments, or utilities will not obstruct access routes.

13.3.3.2 Diversion Requirements (If Applicable)

Where proposals cannot satisfy UÉ separation requirements or where conflicts arise, diversion of existing assets will be required. Diversion proposals will comply fully with UÉ Codes of Practice and be submitted to the Diversions Section for approval.

13.3.3.3 Commitments for Services Report

The accompanying Engineering Services Report will:

- Clearly show all existing UÉ assets and required separation distances

- Confirm compliance with UÉ Codes of Practice
- Detail all mitigation measures for asset protection
- Identify any required diversions
- Include method statements for working in proximity to watermain
- Confirm that all service connections and boundary boxes comply with UÉ standards

13.3.4 WATER DEMAND CALCS

Water Demand has been calculated in accordance with guidelines outlined in Irish Water's Pre-connection Enquiry Application Form:

Residential Dwellings

• No. of Housing Units	815
• Average Occupancy Ration (Persons Per Dwelling)	2.7
• Per-Capita Consumption (l/person/day)	150
• Average Domestic Daily Demand (l/sec)	3.820
• Post Development Average Hour Water Demand (l/sec)	4.775
(1.25 x Average Domestic Daily Demand)	
• Post Development Peak Hour Water Demand (l/sec)	23.877
(5.0 x Post Development Average Hour Water Demand)	

Non-Residential i.e. Creche

• Assumed occupancy	250
• Per-Capita Consumption (l/person/day)	50
• Average Domestic Daily Demand (l/sec)	0.145
• (Based on 8-hour occupancy)	
• Post Development Average Hour Water Demand (l/sec)	0.180
• (1.25 x Average Domestic Daily Demand)	
• Post Development Peak Hour Water Demand (l/sec)	0.904
• (5.0 x Post Development Average Hour Water Demand)	

See Drawings "2024-122-(050301-050302) – Proposed Watermain Layout".

A Pre-Connection Enquiry has been submitted to the Uisce Eireann Confirmation of Feasibility and it is included in this application.

13.3.5 ROAD NETWORK

Considering the topography, the site has been carefully designed to ensure that the road network fully complies with DMURS 2019 and Part M of the building regulations. Refer to DMURS compliance statement for details.

13.3.6 ELECTRICAL SUPPLY

There is a substation which is been constructed as the previous phase and the power for the proposed development will be fed from this existing ESB substation. The proposed sub stations will provide power to a number of mini pillars which will provide power to the residential dwellings.

13.3.7 OPERATIONAL PHASE

During the operational phase, no significant adverse impacts on utilities are predicted, provided that the proposed development is constructed in accordance with best practice and the requirements of the relevant service providers.

Surface water runoff will be attenuated and discharged at greenfield runoff rates, thereby avoiding increases in flood risk downstream. Sustainable Drainage Systems (SuDS) will be incorporated into the design to provide ongoing treatment of stormwater and to protect local water quality.

Foul drainage will be discharged to the existing public sewer network under the control of Irish Water, ensuring no adverse impacts on public health or the receiving environment.

All connections to water, electricity, gas, telecommunications, and other utilities will be carried out in consultation with the respective statutory providers, ensuring adequate capacity and avoiding disruption to existing services.

No additional operational mitigation measures are considered necessary.

13.4 'DO NOTHING' SCENARIO

It is noted that the site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature, with similar demand requirements, would be progressed on the site that accords with National policy for compact growth, housing requirements and consolidation of existing built up areas in the short-medium term. Any such development would require water supply, drainage infrastructure, would increase the foul loading and would require connections to utilities infrastructure.

It is not possible to identify the loadings that would be associated with an alternate future development proposal in the absence of a planned project. However, it is anticipated that it would be similar to the proposed development and the effects would be similar to those described in this chapter.

In the absence of this proposed development, there would be no increased demand on the aforementioned utilities within would be neutral.

13.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

This section provides a description of the specific, direct and indirect impacts that the proposed development may have during both the construction and operational phase of the proposed project.

13.5.1 CONSTRUCTION STAGE

The construction phase of the proposed development is likely to result in short term impacts on the existing urban settlement in the vicinity of the site. The development will be constructed in five phases with an anticipated completion by 2031.

13.5.1.1 Ownership and Access

The subject lands are not developed at present. There will be some temporary disturbance during construction to the surrounding area, however, this will be minimized through appropriate mitigation measures as set out in the Construction Environmental Management Plan, prepared by Paul McGrail Consulting Engineers (contained in Appendix D Volume III of the EIAR. The mitigation measures set out in this EIAR and the CEMP, along with any relevant conditions of the grant of permission, will be incorporated into the final Contractors CEMP.

Once a contractor has been appointed a detailed and final CEMP including traffic management details will be prepared and agreed prior to the commencement of the development. The surrounding road network is suitable to accommodate the construction traffic associated with the proposed development and the

Construction Traffic Management Plan will include a range of mitigating measures as identified in the CEMP to ensure the safety of the workforce on the site and accessing the site, and the public on the surrounding roads and to minimise construction traffic generation and disruption on the surrounding road network.

The construction phase of the proposed development is likely to result in slight negative and short-term impact on the existing urban settlement in the vicinity of the site. The development will be constructed in ten phases, with the completion date of 2029.

13.5.1.2 Surface Water Drainage

During the construction stage, there is a risk that mobilisation of sediments and harmful substances may be flushed into the surface water drainage system during rainfall events, due to exposed soil and earth movement. Accidental spills of harmful substances such as petrol or oil during the delivery and storage of harmful substances or by leakages from construction machinery. In the absence of mitigation, the effects on the local surface water network are local, not significant, and temporary in duration.

In terms of the construction phase, the proposal will involve providing new connection to the existing surface water drainage. The proposed service will consist of a connection to an existing ditch and will be performed in one working day. Any impacts will be neutral, imperceptible and brief. Potential impacts on the surface water infrastructure that may arise during the construction phase include:

- Contamination of surface water runoff due to construction activities.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

13.5.1.3 Foul Water Drainage

The proposal for the construction stage is to apply to Uisce Eireann for a temporary connection and to connect to the existing foul infrastructural network. There will be minimal impact on the existing service to the development under construction during the construction stage on the foul network.

The proposed service will consist of the connection to existing manhole of the foul water network and will be performed in one working day for each connection. Any impacts will be neutral, imperceptible and brief.

To mitigate the above best practice construction practices should be adhered to and Uisce Eireann procedures followed. The impact on foul drainage during the construction stage will be brief, neutral and imperceptible and no long-term impacts will result from the construction stage.

The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established. The wastewater discharge during the construction phase will be significantly less than the wastewater volumes calculated for the development in the operational phase.

Accidental spills of harmful substances such as petrol/diesel or oil during the delivery and storage of harmful substances or by leakages from construction machinery may be washed into the wastewater supply system, causing contamination/pollution. Even in the absence of the mitigation measures, the likely effects are local, not significant, and temporary in duration.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

13.5.1.4 Watermain

During the construction of the proposed development, works will take place in an environment where existing Uisce Éireann public water infrastructure is present, as confirmed in the Uisce Éireann Confirmation of Feasibility and Scoping Response. Construction activities must therefore be managed to ensure that no works inhibit access to these assets or compromise their structural or operational integrity. The installation of the new on-site watermain network may require temporary shutdowns of the existing public water supply to facilitate connection works. Any such shutdowns will be minimised, will be agreed in advance with Uisce Éireann in accordance with their procedures, and all affected parties will be notified in advance of any short-term interruptions.

There is a potential risk of accidental damage, contamination, or interference with the existing public water supply during construction, particularly when excavation works or pipe-laying occur near existing watermains. Additional risks include settlement or vibration impacts on existing infrastructure and obstruction of access to Uisce Éireann assets. To address these risks, a detailed underground services survey and targeted trial investigations will be undertaken to confirm the exact location and depth of existing mains. All required separation distances will be maintained in accordance with Uisce Éireann Codes of Practice, and no build-over of existing infrastructure will occur. Where compliance with separation requirements cannot be achieved, a formal Diversion Enquiry will be submitted to the Uisce Éireann Diversions Section for assessment.

Mitigation measures during construction will include the establishment of construction exclusion zones around existing watermains, the use of hand excavation or vacuum excavation when working in proximity to critical infrastructure, and the implementation of vibration and load control procedures to prevent any structural impact on the existing mains. All new watermains will be installed, cleaned, pressure tested, disinfected and commissioned in accordance with Uisce Éireann guidelines and standards, and the final connection to the public network will be carried out by Uisce Éireann or an approved contractor under their supervision. The potable water supply to the construction compound will be protected from contamination and will be installed to Uisce Éireann standards with appropriate boundary boxes and backflow prevention systems. Best practice construction methodologies will be adhered to throughout, and emergency response procedures will be in place in the event of accidental damage to any existing watermain.

Water demand during the construction phase will be minor and significantly lower than that expected during the operational phase of the development. As such, any increase in water usage is expected to be neutral, short-term and imperceptible. With the implementation of the mitigation measures described, any potential impacts on the public water supply or existing Uisce Éireann infrastructure during the construction phase will be brief, neutral and imperceptible. In the absence of these measures, the construction phase could have a neutral, short-term, moderate impact due to the potential for service disruption or damage, but with mitigation in place the effect is reduced to neutral and imperceptible.

13.5.1.5 Natural Gas

No works will be undertaken to the existing GAS network.

13.5.1.6 Electricity Supply

Construction related activities will require temporary connection to the local electricity supply network. The potential impact from the construction phase of the proposed development on the local electrical supply network is likely to be brief and imperceptible.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

13.5.1.7 Communications

Fixed telecoms will be provided from the existing network running along the central local road.

The potential impact from the construction phase of the proposed development on the local telecoms network is likely to be brief, neutral and imperceptible and negligible.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

13.5.1.8 Waste Management

The construction phase of the proposed development will give rise to the requirement to remove or to bring to the site quantities of material, including excavated material not suitable for reuse. Construction related material will also be created on the proposed development site. This has the potential to impact on the local municipal waste disposal network, but this will be short term and moderate. Refer to the Resource Waste and Demolition Waste Management Plan.

13.5.2 OPERATIONAL PHASE IMPACTS

The operational stage will result in the provision of 815 no. dwellings (610 no. houses, 194 apartments & 11 no. later living dwellings), a portion of the C-Ring Road, open space, community building/retail floor space and 2 no. creches.

13.5.2.1 Ownership and Access

The proposed development includes for two vehicular accesses to the proposed development from the proposed local roads. A Traffic and Transport Assessment has been prepared by Transport Insights and is submitted with this planning application as a standalone report. The potential impacts are also identified in Chapter 11 Material Assets - Traffic and Transport. The Traffic and Transport Assessment assess the anticipated levels of traffic generated by the proposed development and models the impacts of the proposed development on surrounding road infrastructure.

13.5.2.2 Surface Water Drainage

Refer to Chapter 6 for further information regarding potential impacts of surface water infrastructure during operation of the development.

The proposed development will increase the impermeable surface area and reduce groundwater recharge.

The proposed connection point of the Surface water will be to the existing surface water network. Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, slight impact.

13.5.2.3 Foul Water Design

During the operational phase there will be an increase in the foul discharge from the proposed development. Irish Water have carried out an assessment of the operational phase foul discharge rates through the Pre-Connection Enquiry process and confirmed a feasibility of a connection without any upgrade requirements to the public sewage system to facilitate that connection. Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, slight impact.

13.5.2.4 Watermain/supply

The water consumption is a function of the usage of the development. The water demand is designed in accordance with the principles and methods set out in Irish Water's Code of Practice for Water Infrastructure Connections and Developer Services Design & Construction Requirements for Self-Lay Developments July 2020.

The proposed development will increase water demand on the water supply network and may lead to reduced pressure in the network if adequate supply is unavailable. However, Irish Water's confirmation of feasibility indicates that there is adequate capacity in the existing public watermains network.

The potential impact from the operational phase on the water infrastructure is an increase in the quantity of water to be treated and supplied through the network. Uisce Eireann have confirmed the existing network has capacity. Without the consideration of mitigation measures the operational phase of the proposed development will likely have a neutral, permanent, slight impact.

13.5.2.5 Natural Gas

All houses will utilise Air to Water Heat pumps which will negate the need for GAS. No impacts on supply are anticipated.

13.5.2.6 Electricity Supply

The impact of the operational phase of the proposed development on the electricity supply network is likely to increase the demand on the existing supply. The existing network has the capacity to cater for the proposed development. Therefore, it will likely have a neutral, permanent, imperceptible impact.

13.5.2.7 Communications

The installation of the telecoms (Virgin and Eir) will be in accordance with the requirements of the utility provider and will be carried out by approved contractors. There will be no impact in the operational phase of the telecoms network. The existing network has the capacity to cater for the proposed development. Therefore, it will likely have a neutral, permanent, imperceptible impact.

13.5.2.8 Waste

There will be an increased demand on the municipal waste disposal system operated by Fingal County Council. All the waste generated will be subject to the Fingal County Council Bye Laws for the Segregation, Storage and Presentation of Household Waste. The impact is likely to be negligible.

13.5.3 RISK OF MAJOR ACCIDENTS AND/OR DISASTERS

The proposed development has been designed and will be constructed in line with best practice and, as such, major accidents and / or natural disasters will be low. The identification, control, and management of risk is an integral part of the design and assessment process throughout all stages of a project lifecycle. Measures to control risks associated with Construction Phase activities are incorporated into the Construction Environmental Management Plan, included in Appendix D of Volume III of the EIAR.

Excavation works coming into contact with live electricity lines could potentially give rise to a serious incident putting people at risk. This risk is not significant as all ESB services will be constructed below ground and main lines will be diverted prior to commencement of the works.

There will be no risk of gas explosion within the site since there is no gas network inside site boundary.

A flood risk assessment has been carried out to confirm that the site is not at risk from flooding. The control of storm water runoff to green field rates will help reduce the risk of flooding in the local ditches. Catchment and its discharge to this catchment will reduce the potential flood risk.

The risk of flooding due to attenuation failure is low due to design considerations of catchment areas and flow controls. The proposed infrastructure is designed in accordance with the relevant regulations, codes of practice and guidelines to provide sufficient flow capacity.

In case of obstruction of outflow in the overground storage structures a drawing was produced to show an overland flow route which ensures no dwelling is at risk from flooding.

The risk of soil pollution and ground water contamination caused by spillage or leaks is deemed low as the Foul network will be constructed to the required Uisce Eireann Standards and monitored during the works.

The collapse of soil from an exposed excavation is considered low due design measures once stockpile heights and their location are managed and any steep excavations are properly supported either with temporary works or by permanent retaining wall structures. All temporary works should they be required will be designed in accordance relevant codes of practice.

13.5.4 POTENTIAL CUMULATIVE IMPACTS

The cumulative effects of the development on material assets have been assessed taking into account other planned, existing and permitted developments in the surrounding area. Chapter 17 provides a list of projects in the vicinity of the project lands.

Other developments identified include:

Planning Reg. Ref. ABP-312048-21 (F21A/0055) – Phase 3A Ladywell

On the 13th of October 2023, An Bord Pleanála upheld the decision of Fingal County Council and granted permission for phase 3A as part of the overall phase 3 at Ladywell comprising 99 no. dwellings open space and services and road layout for phases 3A-3D.

Planning Reg. Ref. F22A/0526 – Phase 3B Ladywell

Under Planning Reg. Ref. F22A/0526 Fingal County Council granted permission for phase 3B as part of the overall phase 3 at Ladywell which comprises 95 no. dwellings open space and services and road layout for phases 3A-3D.

Planning Reg. Ref. F22A/0670 - Phase 3C Ladywell

On the 5th of July 2023, Fingal County Council granted permission for development on the Phase 3C lands comprising 75 units open space and services and road layout for phases 3A-3D.

Planning Reg. Ref. ABP-321437-24 (LRD0048/S3E) – Phase 4 Ladywell

On the 27th of March 2025, An Bord Pleanála upheld the decision of Fingal County Council and granted permission for phase 4 as part of the Ladywell Development comprising 197 no. dwellings open space and services and road layout.

Cumulatively with other surrounding permitted, planned and existing development, it is predicted that the proposed development will contribute to the improvement of the overall urban environment.

The cumulative effects of the development on the foul, surface water, watermain and waste management systems are anticipated to be short term, neutral, and imperceptible. No significant impacts are anticipated.

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

13.6 MITIGATION MEASURES

All possible measures will be taken to avoid unplanned disruptions to any services within the site during construction of the proposed development. It should be noted that a number of mitigation measures are proposed in other chapters of this EIAR, which are collated into Chapter 18 of this EIAR. The mitigation measures contained in Chapter 18 of the EIAR will be incorporated into the Contractor's CEMP.

It should be noted that a number of mitigation measures are proposed in other chapters of this EIAR. Mitigation measures proposed in respect to Material Assets are as follows:

13.6.1 CONSTRUCTION STAGE

The following mitigation measures are proposed for the construction phase of the development with respect to Material Assets:

- The proposed development will comply with the provisions of the Resource Waste Management Plan prepared by AWN included in Appendix E of Volume III of the EIAR, with respect to construction waste.
- The proposed development will comply with the provisions of the Construction Environmental Management Plan included in Appendix E of Volume III of the EIAR.
- Water metering will be provided during the construction phase to record consumption.
- All new services will be constructed and provided in strict accordance with the relevant codes of practice.

13.6.2 OPERATIONAL STAGE

- All new foul and surface water drainage pipes to be pressure tested and CCTV to identify any possible defects
- Water conservation measures to implemented, which include water metering, recycling vehicle wash waters, rainwater capture, low flush, waterless urinals, spray taps, efficiency attachments.
- Ensure that all Hydrobrakes are designed to limit the flow of water from the development to the greenfield run off.
- All watermain pipes to be pressure tested in accordance with Uisce Eireann details.

In addition, construction stage mitigation measures are also provided in Table 13.3 below.

Table 13.3: Operational Stage Mitigation Measures

Character of potential impact	Mitigation measure
Construction Phase	
Damage to existing utilities	Contractor will prepare Method Statement detailing the proposals for works in the vicinity of existing utilities (method statement to be agreed with Project Supervisor Design Process (PSDP))

Contamination of surface water runoff due to construction activities	Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
Improper discharge of foul drainage from contractor's compound	Foul drainage discharge from the construction compound will be transported off site to a licensed facility until a connection to the public foul drainage network has been established.
Cross contamination of potable water supply to construction compound	The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.
Damage to existing underground and overground infrastructure and possible contamination of the existing systems with construction related materials.	A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Please refer to PMCG Construction & Environmental Management Plan.
Potential loss of connection to the Telecommunications infrastructure while carrying out works to provide service connections	Connections to the existing telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.
Operational Phase	
Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff	Please refer to Chapter 6.0 – Water Hydrogeology and Hydrology for mitigation measures associated with the surface water treatment.
Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).	Please refer to Chapter 6.0 – Water Hydrogeology and Hydrology for mitigation measures associated with the surface water treatment.
Increased discharge to foul drainage network	Water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.
Increased potable water consumption	Water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.
Contamination of surface water runoff from foul sewer leaks.	All new foul drainage lines will be pressure tested and will be subject to a CCTV survey in order to identify any possible defects prior to being made operational.

13.7 RESIDUAL IMPACTS

13.7.1 CONSTRUCTION PHASE

The construction stage of the proposed development will comprise of site clearance and preparation, excavation and the construction of the proposed development over three phases of development. The

potential impacts associated with the construction stage of the proposed development on material assets are likely to be temporary and will cause minor disturbance. Provided mitigation measures are adhered to the construction phase of the proposed development will likely have a neutral, short-term, moderate impact.

13.7.2 OPERATIONAL PHASE

The proposed development will have a positive impact on the surrounding environment by providing much needed housing in the area and meeting the needs of the growing population.

The loading on the wastewater and watermains from the proposed development will be adequately accommodated in the foul and watermain network.

In compliance with the SUDS manual the runoff from the development will mimic the existing greenfield run off therefore, it will likely have a neutral, permeant, imperceptible impact.

13.8 MONITORING

Please refer to Chapter 6.0 – Water and Chapter 4.0 Biodiversity for the proposed monitoring in relation to the surface water during the construction phase. There is no specific monitoring is proposed in relation to the remaining material assets infrastructure during the construction phase.

Once operational water usage will be monitored by a bulk water meter and compared to anticipated usage. This will allow Uisce Eireann to monitor any potential leaks.

Proposed monitoring during the operational phase in relation to the water infrastructure are as follows:

- All drainage works will be approved by Fingal County Council, Sanitary Services Division, and will be carried out in accordance with the GDR COP (Greater Dublin Regional Code of Practice for Drainage Works).
- The surface water and foul drainage systems will be monitored by way of observation of any flooding events if such occur and the establishment of a proper maintenance programme for all sewers / Suds features etc.
- Regular cleaning of pipe networks within the development taken in charge will ensure no blockage will obstruct any flow from surface and foul networks.
- On-going water usage within the proposed development will be monitored by bulk water meters. Water usage will be monitored by the relevant authority to avoid waste and leaks etc.
- All drainage works will be approved by Fingal Dublin County Council and will be carried out in accordance with the GDR COP (Greater Dublin Regional Code of Practice for Drainage Works).
- All foul and surface water sewers will be CCTV surveyed prior to being '*taken in charge*' by Fingal County Council.

Mismanagement or failure of the potable water supply drainage could lead to contamination during the construction phase. Working in trenches and in close proximity with live services could pose a risk to human health if mitigation measures are not put in place. The exposure of bedrock could, cause the risk of Radon exposure to human health during the construction phase. The use of Radon barriers in construction will mitigate this risk.

Quality of Effect: Negative.

Significance of Effect: Slight.

13.9 SIGNIFICANT INTERACTIONS

13.9.1 SOILS AND GEOLOGY

13.9.1.1 Construction phase

Trench excavations to facilitate site service installation will result in exposure of subsoils and bedrock to potential erosion and subsequent sediment generation. Exposed soil during the construction phase of the proposed development may give rise to increased dust emissions. However, the implementation of the dust management and dust control measures will ensure that the proposed development will not give rise to the generation of any significant quantities of dust.

Quality of Effect: Negative.

Significance of Effect: Slight.

13.9.1.2 Operational Phase

Interactions between soils/geology will be limited to the construction phase due to material excavation.

Implementation of the mitigation measures described in Chapter 5 – Soil and Geology will prevent and minimize the potential impacts of this interaction.

Quality of Effect: Neutral.

Significance of Effect: Imperceptible.

13.9.2 WATER QUALITY

13.9.2.1 Construction Phase

A deterioration in water quality in nearby watercourses could occur during the construction phase of the proposed development due to rainwater run-off containing sediments, concrete and hydrocarbon spillages.

Implementation of the mitigation measures described in Chapter 6 – Water: Hydrology and Hydrogeology will prevent and minimize the potential impacts of this interaction.

Quality of Effect: Neutral.

Significance of Effect: Not significant.

13.9.2.2 Operational Phase

As all wastewater from the site is to be discharge to the existing 450mm Uisce Eireann Pipe and it is not anticipated that there will be any impacts on water quality during the operational phase of the development.

Implementation of the mitigation measures described in Chapter 6 – Water Hydrogeology and Hydrology will prevent and minimize the potential impacts of this interaction.

Quality of Effect: Neutral.

Significance of Effect: Not significant.

13.9.3 HUMAN HEALTH

13.9.3.1 Construction Phase

Mismanagement or failure of the potable water supply drainage could lead to contamination during the construction phase. Working in trenches and in close proximity with live services could pose a risk to human health if mitigation measures are not put in place. The exposure of bedrock could, cause the risk of Radon exposure to human health during the construction phase. The use of Radon barriers in construction will mitigate this risk.

Quality of Effect: Negative.

Significance of Effect: Slight.

13.9.3.2 Operational Phase

The completed development will generate additional emissions to the atmosphere due to traffic associated with the development, and due to plant equipment within the development. However, air quality in the region of the site is expected to be within the limits set by the air quality standard.

Implementation of the mitigation measures described in this chapter and in Chapter 6 – Water Hydrogeology and Hydrology will prevent and minimize the potential impacts of this interaction.

Quality of Effect: Negative.

Significance of Effect: Slight.

13.10 REINSTATEMENT

Reinstatement of any excavations relating to the provision of surface and foul drainage, electrical, gas and telecommunications connections is to be carried out in accordance with the relevant asset provider's requirements and the requirements of Fingal Dublin County Council.

13.11 REFERENCES AND SOURCES

CIRIA (October 2023) Environmental good practice on site guide (fifth edition)

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

EPA (September 2003) Advice notes on current practice in the preparation of Environmental Impact Statements

13.12 RESPONSE TO UISCE ÉIREANN EIAR SCOPING COMMENTS

Uisce Éireann issued a scoping response dated 23 October 2025 (Ref: PN2500030454), included in Appendix B, Volume III of the EIAR. The following section summarises the issues raised and outlines how they have been addressed within this EIAR.

13.12.1 UPDATED PRE-CONNECTION ENQUIRY (PCE)

Uisce Éireann notes that the layout, unit numbers and site area differ from those associated with previous engagement (Ref: CDS25005017) and recommends submission of a revised PCE.

Response:

A revised Pre-Connection Enquiry has been submitted to Uisce Éireann. The foul and water supply networks have been designed in accordance with Uisce Éireann Codes of Practice.

13.12.2 EXISTING UISCE ÉIREANN ASSETS AND BUILD-NEAR / NO-BUILD REQUIREMENTS

Uisce Éireann identifies potential conflicts between the proposed development and existing public assets within the lands. The developer must demonstrate that access, structural integrity and operational performance are not compromised.

Response:

All existing Uisce Éireann assets have been identified through site surveys and record information. The proposed development avoids all build-over of public water services assets; provides required separation distances; will progress a diversion application where required at detailed design stage; and will provide method statements and clearance drawings as required.

13.12.3 PROTECTION OF DRINKING WATER SOURCES

Uisce Éireann requires demonstration that the development will not negatively affect public drinking water abstractions.

Response:

The site is not located within any drinking water source protection zone. There are no hydrological pathways linking the development to a drinking water abstraction. Stormwater is fully treated through SuDS and discharged to the local authority network. The development therefore presents no risk to Uisce Éireann drinking water sources.

13.12.4 HYDROLOGICAL AND HYDROGEOLOGICAL PATHWAYS

UE requires identification of pathways between the site and receiving waters.

Response:

Chapter 6 (Hydrology & Hydrogeology) confirms that no direct pathway exists to public drinking water sources; surface water is attenuated to greenfield runoff and treated through SuDS; and foul flows are conveyed to the existing separate foul sewer network, which Uisce Éireann confirms has adequate capacity.

13.12.5 BACKFILLING MATERIALS – CHEMICAL COMPOSITION & MONITORING

UE requests detail regarding chemical characteristics of backfill and associated monitoring.

Response:

All imported materials will comply with EPA Waste Acceptance Criteria, the Waste Management Act, and TII Earthworks Guidelines. Verification testing and monitoring procedures are included in the CEMP and in Chapter 5 (Soils & Geology). No unacceptable risks to groundwater or aquifers are anticipated.

13.12.6 CAPACITY OF WATER AND WASTEWATER INFRASTRUCTURE

UE requires demonstration of available capacity and confirmation that a COF/PCE accompanies the application.

Response:

A revised PCE has been submitted and the Uisce Éireann confirms adequate water supply and foul sewer capacity and that no network upgrades are required to facilitate the development.

13.12.7 SURFACE WATER DISCHARGE PROHIBITION TO SEWER

UE reiterates that surface water may not enter the foul or combined sewer network.

Response:

No surface water will discharge to Uisce Éireann infrastructure. All stormwater is managed through SuDS and attenuated to greenfield runoff rates prior to discharge to Fingal County Council's surface water network.

13.12.8 IDENTIFICATION OF PUBLIC INFRASTRUCTURE, WAYLEAVES AND ASSETS

UE requires assessment of all public assets within/near the site.

Response:

All assets have been identified through surveys, trial investigations and review of Uisce Éireann records. No build-over occurs, and all clearances comply with Uisce Éireann Standards & Codes.

13.12.9 IMPACTS ON RECEIVING WATERS, PROTECTED AREAS AND ASSIMILATIVE CAPACITY

UE requires assessment of potential impacts on receiving waters and sensitive areas.

Response:

The development does not introduce any new foul discharge points. All foul flows connect to existing public infrastructure. Surface water discharge occurs to the local authority network following treatment and attenuation. No impact on protected areas or assimilative capacity is predicted.

13.12.10 REQUIREMENT FOR CONNECTION AGREEMENTS

UE states that the developer must enter into water and wastewater connection agreements before commencement.

Response:

The applicant will enter into all required Uisce Éireann connection agreements prior to commencement.

13.12.11 CONCLUSION

All issues raised in the Uisce Éireann Scoping Response have been addressed within this EIAR, the Engineering Services Report, and the supporting drainage and water supply designs. The proposed development complies with all relevant Uisce Éireann Codes of Practice, and no significant adverse effects on public water services infrastructure are anticipated.

14.0 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

14.1 INTRODUCTION

14.1.1 GENERAL

IAC Archaeology has prepared this chapter on behalf of Glenveagh Homes, to assess the impact, if any, on the archaeological, architectural, and cultural heritage resource of a proposed development at Balbriggan, County Dublin (Phase 5, Figure 14.1). The assessment was undertaken by Faith Bailey (MA, BA (Hons), MIAI, MCIfA) of IAC Archaeology. Faith has over 20 years' experience in archaeological and cultural heritage consultancy, responsible for the production of EIAR and assessments for all aspects of development nationwide. The proposed development area is located within the townlands of Flemington and Clonard or Folkstown Great, Balbriggan, County Dublin.

Figure 14.1: Location of Proposed Development and Surrounding Heritage Sites



This study determines, as far as reasonably possible from existing records, the nature of the archaeological resource in and within the vicinity of the development area using appropriate methods of study. The study area is defined as an area measuring 500m from the proposed development area.

Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets (CIfA 2014). In order to compile a complete baseline, a site inspection is carried out to complement the results of the desk-based assessment. This leads to the following:

- Determining the presence of known archaeological and built heritage sites that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the impact upon the setting of known cultural heritage sites in the surrounding area;
- Suggested mitigation measures based upon the results of the above research.

14.1.2 DEFINITIONS

In order to assess, distil and present the findings of this study, the following definitions apply:

'*Cultural Heritage*' where used generically, is an over-arching term applied to describe any combination of archaeological, architectural, and cultural heritage features, where –

- the term '*archaeological heritage*' is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places).
- the term '*architectural heritage*' is applied to structures, buildings, their contents and settings of an (assumed) age typically younger than AD 1700.
- the term '*cultural heritage*', where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

14.1.3 IMPACT DEFINITIONS

The quality and type of an effect can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports [EPA 2022]):

- negative effect: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;
- neutral effect: A change which does not affect the quality of the environment; or
- positive effect: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage sites.

The below terms are used in relation to the archaeological and architectural heritage and relate to whether a site will be physically affected upon or not:

- direct effect: Where an archaeological/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 effect: Where a feature or site of archaeological or cultural heritage merit or its setting is located in close proximity to the footprint of a development.
- Neutral: No effects (either negative or positive) are predicted.

Table 14.1: Significance of Effect Definitions

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.

(as defined by the EPA 2022 Guidelines, 50-52)

14.1.4 CONSULTATIONS

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage – the Heritage Service, National Monuments and Historic Properties Section: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database; Preservation Orders and Register of Historic Monuments;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- Fingal County Council: Planning Section; and
- Historical and Ordnance Survey Maps.

14.2 ASSESSMENT METHODOLOGY

The assessment has been carried out in two main phases. The first phase comprised a paper survey of all desktop resources. The second phase comprised a field inspection of the proposed development area. A small programme of geophysical survey has also been carried out within the southern portion of the proposed development area, where a new road is proposed.

14.2.1 PAPER SURVEY

The following sources were examined and a list of areas of archaeological, architectural and cultural heritage potential was compiled:

- Record of Monuments and Places for County Dublin;
- Sites and Monuments Record for County Dublin;
- Monuments in State Care Database;
- Preservation Orders;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Fingal County Development Plan 2023-2029;

- Aerial photographs;
- Place Name Analysis;
- Excavations Bulletin (1970–2025); and
- National Inventory of Architectural Heritage.

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as ‘un-located sites’ and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. SMR/RMP sites are also listed on a website map (Historic Environment Viewer) 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.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The Fingal County Development Plan (2023-2029) was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey and Google Earth.

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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.

Excavations Bulletin is a summary publication that has been produced every year since 1970. This summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. This information is also available online (www.excavations.ie) from 1970–2025.

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.

14.2.2 FIELD INSPECTION

Field inspection is necessary to determine the extent and nature of archaeological, architectural, and historical remains and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

The field inspection entailed:

- Inspecting the proposed development area and its immediate environs.
- Noting and recording the terrain type and land usage.
- Noting and recording the presence of features of archaeological, architectural, or cultural heritage significance.
- Verifying the extent and condition of any recorded sites.
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

14.2.3 GEOPHYSICAL SURVEY

Geophysical survey is used to create ‘maps’ of subsurface archaeological features. Features are the non-portable part of the archaeological record, whether standing structures or traces of human activities left in the soil. Geophysical instruments can detect buried features when their electrical or magnetic properties contrast measurably with their surroundings. In some cases, individual artefacts, especially metal, may be detected as well. Readings, which are taken in a systematic pattern, become a dataset that can be rendered as image maps. Survey results can be used to guide excavation and to give archaeologists insight into the pattern of non-excavated parts of the site. Unlike other archaeological methods, the geophysical survey is not invasive or destructive.

A geophysical survey was undertaken within the southern portion of the proposed development in September 2025 (Dowling 2025, Licence No. 25R0359). A summary of the geophysical report is presented in this chapter.

14.3 EXISTING RECEIVING ENVIRONMENT (BASELINE SCENARIO)

14.3.1 ARCHAEOLOGICAL, ARCHITECTURAL AND HISTORICAL BACKGROUND

The proposed development area is located in the townlands of Flemington and Clonard or Folkstown Great, Parish of Balrothery and Barony of Balrothery East, County Dublin. It is situated c. 1.4km west of the centre of Balbriggan. There are 17 recorded archaeological sites within the study area, of which six are located within the proposed development area. These recorded monuments consist of two enclosures (DU001-033 and DU001-027), an excavation and a pit (DU001-022001-2), a field system (DU001-023) and a miscellaneous excavation (DU001-026).

The pit (DU001-022002) and field system (DU001-023) were discovered during geophysical survey (Nicholls and Shiel 2005, Licence No. 05R0137), followed by archaeological testing (Elliot 2007, Licence No. 07E0057). These features were reconfirmed by testing in 2021 (Bennett 2021:074, Licence No. 21E0298), which also revealed a double ditched enclosure (DU001-033), which dates to either the Bronze Age or the early medieval period.

14.3.1.1 Prehistoric Period

Mesolithic Period (c. 8000-4000 BC)

Recent discoveries may suggest the possibility of a human presence in the southwest of Ireland as early as the Upper Palaeolithic (Dowd and Carden 2016); however, the Mesolithic period is the earliest time for which there is clear evidence for prehistoric human colonisation of the island of Ireland. During this period people hunted, foraged and gathered food and appear to have led a primarily mobile lifestyle. The presence of Mesolithic communities is most commonly evidenced by scatters of worked flint material, a by-product of the production of flint implements.

The eastern seaboard of Ireland has long been associated with prehistoric settlement. This area was intensively and repeatedly settled during this period. Clonard or Folkstown Great contains sites from the Mesolithic through to the Bronze Age and the medieval period. A Mesolithic pathway was identified during excavation in advance of a school development (Bennett 2016:150, Licence No. 15E0586), c. 330m to the southeast of the proposed development area.

Neolithic Period (c. 4000–2500 BC)

During this period 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. Communities expanded and moved further inland to 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 tombs in Ireland, namely the Court Cairn, Portal, Passage and Wedge; of which the latter style straddles the Neolithic to Bronze Age transition.

A Neolithic cremation pit was uncovered during testing and excavations (Bennett 2018:822, Licence No. 18E0238), c. 231m to the south of the proposed development area. Linear enclosing ditches and evidence of Neolithic activity in the form of a curvilinear channel and the burnt remnants of a possible hearth were also revealed. Evidence for Neolithic habitation (DU001-014) was identified c. 36m east of the proposed development area at Flemington. Here a substantial assemblage of early Neolithic pottery was recovered (Bolger 2009, 25). Within the wider area, a passage tomb cemetery (DU002-001001-005) is located at Bremore, c. 2.8km northeast of the proposed development area.

Bronze Age (c. 2500–800 BC)

This period is marked by the use of metal for the first time. As with the transition from Mesolithic to Neolithic, the transition into the early Bronze Age was accompanied by changes in society. Megalithic tombs 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.

An enclosure (DU002-020) was archaeologically tested in 2017, c. 297m to the east of the proposed development area (Bennett 2017:238, Licence No. 17E0247). This recovered late Bronze Age pottery from an inner enclosure ditch and identified peripheral features comprising a rectangular trough and six pits. The feature may represent a larger-scale Bronze Age funerary monument, several of which have been identified in Fingal to date.

In 2015, archaeological testing identified 26 features comprising prehistoric and medieval activity, c. 323m southeast of the proposed development area (Bennett 2015:372, Licence No. 15E0507). These features included a Bronze Age penannular enclosure likely representative of a burial monument as well as a portion of a ring barrow (Bennett 2016:150, Licence No. 15E0586). The southern portion of the ring barrow had been previously excavated in relation to Boulevard Road (Bennett 2015:165, Licence No. 15E0558), c. 219m southeast of the proposed development area.

Over 7,000 burnt mounds or fulacht fia sites have been recorded in the country and c. 1,500 examples 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.

A burnt spread (DU002-021) was identified by testing, c. 368m to the southeast of the proposed development area (Bennett 2007:422, Licence No. 07E0057) although it is incorrectly plotted on the Historic Environment Viewer map. Archaeological testing (Bennett 2015:372, Licence No. 15E0507) in advance of a school in 2015 (see above) identified a middle Bronze Age burnt spread and a late Bronze Age fulacht fia.

Iron Age (c. 800 BC–AD 500)

There is increasing evidence for Iron Age settlement and activity in recent years as a result of development-led excavations as well as projects such as Late Iron Age and Roman Ireland (Cahill Wilson 2014). Yet this period is distinguishable from the rather rich remains of the preceding Bronze Age and subsequent early medieval period, by a relative paucity within the current archaeological record. The Iron Age in Ireland is problematic for archaeologists as few artefacts dating exclusively to this period have been found and without extensive excavation it cannot be determined whether several monument types, such as ring-barrows or standing stones, date to the late Bronze Age or Iron Age. It is likely that there was significant continuity in the Iron Age, with earlier monuments re-used in many cases. An Iron Age charcoal production pit was discovered during testing (see above) in advance of a school development (Bennett 2015:372, Licence No. 15E0507).

14.3.1.2 Early Medieval Period (c. AD 500–1100)

The early medieval period is depicted in the surviving sources as an almost entirely rural based society. Territorial divisions were based on the túath, or petty kingdom, with Byrne (1973) estimating that there may have been at least 150 kings in Ireland at any given time. 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, normally associated with various grades of well-to-do farming and aristocratic classes in early medieval Ireland (Stout and Stout 1997, 20).

Between the 7th and 10th centuries AD, the area of the potential development was located within the eastern part of the *Bréga* territory of the *Síl nÁedo Sláine* branch of the southern *Uí Néill*, which included most of Meath, south Louth, and north Dublin (Byrne 1973, 397). Whilst this tribe had ultimate control, the area was occupied and controlled on a local level by indigenous tribal groups who most likely paid tribute to the *Uí Néill* during this period (Carroll 2008, 13). The tribal groups associated with the Fingal area around the 7th century may have included the *Árd Ciannachta* and the *Gailenga* (ibid. 13). While the general area of Balbriggan and its surroundings could have fallen within the territory of the *Gailenga* at some point and would have certainly formed part of the early *Ciannachta* coastal hegemony, likely, it is more closely associated with the *Saithne* (Bolger 2009, 28). They are particularly associated with the Barony of Balrothery and claimed descent from *Tadc Meic Céin*. Their rise to prominence was aided by the collapse of the *Ciannachta* hegemony and the increasing fragmentation of the *Síl nÁedo Sláine*. It has been suggested that their land formed a buffer between the territory controlled by the Norse of Dublin and the main sub-kingdoms of *Bréga* (Bhrethnach 1999, 5-6). They profited politically from an ambiguous relationship with the Norse and by the 11th and 12th centuries, the ruling branch, the *Ua Cathasaig*, were styling themselves as Kings of Brega (Bolger 2009, 28).

The ringfort or rath is considered to be the most common indicator of settlement during the early medieval period (Stout 1997). One of the most recent studies of early medieval settlement enclosures has suggested that 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. A possible ringfort (DU001-027) is located within the proposed development area, measuring c. 30m in diameter. Within the wider area, a large-scale bivallate ringfort (DU005-115), with an associated souterrain, field system and outer enclosure is recorded at Stephenstown, c. 855m to the southeast the proposed development area. A portion of this site was excavated in 2008 (Bennett 2007:549, Licence No. 07E0836ext) and was carbon 14 dated to cal. AD 779-960.

Evidence for early medieval settlement has also been recorded in the vicinity of the potential development. In 2005, a programme of test trenching and a geophysical survey (Bennett 2005:487 Licence No. 05E0663; Leigh 2005, Licence No. 05R0114), c. 32m to the east of the proposed development area, identified a number of archaeological features and deposits. These features included a sub-square enclosure (DU001-024) and a multi-ditched enclosure (DU001-015). Additional testing was carried out in 2006 to provide more information on the exposed features (Bolger 2006). Excavation of the enclosures dated them to the early medieval period based on finds of several ring-headed pins (Bennett 2006:658, Licence No. 05E0663). It is possible that the field system (DU001-023) recorded to the north of the excavated sites also dates to the early medieval period.

14.3.1.3 Medieval Period (AD 1100–1600)

In the 11th and 12th centuries, just before the Anglo-Norman invasion, Fingal lay between the competing political and territorial zones of the Kingdom of Midhe and the Hiberno-Norse Kingdom of Dublin. The piecemeal conquest by the Anglo-Normans of Ireland, which commenced in 1169, had a fundamental impact on the Irish landscape. By 1185 the Anglo-Normans held the cities of Dublin, Waterford and Cork along with their immediate hinterlands. The initial military successes of the Anglo-Normans are attributed to their fighting skill especially on horseback, their organisation and their ability to build strongholds quickly in strategic positions. They also had a preference for established sites with existing infrastructure. The

introduction of the large earthwork (Motte) and timber and stone castles of the Anglo-Normans was novel to the Irish landscape, and these features are predominantly found in the south and east of the country in the areas of Anglo-Norman colonisation.

The largest medieval settlement within the landscape surrounding the proposed development area is Balrothery, which is located c. 2.2km to the southeast. A probable small manor was also present at Bremore, adjacent to Bremore Castle (DU002-002001), c. 1.3km to the northeast, with a further medieval settlement present at Folkstown Little and Folkstown Great, c. 620m to the southeast of the proposed development area (Kavanagh 2010, Licence No. 08E0054). One Anglo-Norman name links Bremore and Balrothery during the medieval period, which is De Rosel. Robert de Rosel was granted land at Balrothery at an early stage of the Anglo-Norman invasion. He was a direct descendent of Hugh de Rozel who came from a hamlet of the same name in Normandy (Carroll 2008, 17).

De Rosel and his men helped Strongbow's army take the Viking city of Dublin and De Rosel was rewarded with lands in Balrothery. He had seven sons and one daughter. His fourth son Patrick, who had been enfeoffed in one knight's fee with land in Derbyshire is recorded as living in Balrothery during c. 1200. By this time land at Balrothery also belonged to de Costedin, as it is recorded that he donated land to the church between 1192 and 1212. However, as de Rosel is recorded as a parson in Balrothery Church, the transfer of land was not to take place until after his death (ibid. 17).

At Bremore, the earliest references to a possible castle or manor are found in the Gormanston Register, which names Wylliam Rosselle as Lord of Dunbeg in County Derby and Bremore in Ireland (O'Carroll 2009, 79). The Gormanston Register is a collection of manuscripts dating from 1175 to 1397, which were collected by the Viscounts Gormanston and are now held by the National Library. The Dunbeg title presumably refers to the knight's fee in County Derby that was held by Patrick de Rosel at the turn of the 13th century. William is also mentioned in association with Bremore in the Calendar of Documents Relating to Ireland in 1299-1300 (ibid. 79). It is therefore reasonable to argue that de Rosel was granted a large amount of land in and around Balrothery, which may well have included Folkstown Little and Great.

14.3.1.4 Post-Medieval Period (AD 1600–1800)

After defeating James II at the Battle of the Boyne in 1690, William of Orange established his camp in Balbriggan c. 1.4km to the east of the proposed development area. The population of Balbriggan was relatively small in 1659, consisting of only 30 people, with 26 being Irish and four being English, compared to neighbouring villages like Balrothery with a population of 204 and Bascadden with 190. With the introduction of new industrial developments in the weaving industries and the construction of a new coach road that ran through the town, Balbriggan began to experience rapid growth. The expansion of the town is well-documented and owes much to the foresight and ambition of the Hamilton family, who owned a large portion of the area. In 1780, Baron Hamilton established Smyco, a weaving company that provided significant employment opportunities for the region.

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. 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. Buildings of architectural heritage value in the vicinity of the proposed development area include Tankard Ville surrounded by a demesne landscape, c. 1.3km east of the proposed development area. This building is recorded as having been sold to John Rottorn of Dublin in 1702 and is currently in use as Balbriggan Community Creche and Playschool.

14.3.2 SUMMARY OF PREVIOUS ARCHAEOLOGICAL FIELDWORK

A review of the Excavations Bulletin (1970–2025) and the available excavation reports has revealed that a number of previous archaeological investigations have been carried out within the proposed development area. These are described below.

A geophysical survey was carried out on the lands to the south of Flemington Lane to the RI22 in 2005, which included the proposed development area (Nicholls and Shiel 2005, Licence No. 05R0137). A number of anomalies were identified within the landscape including several enclosures (DU001-027, DU001-020-25) and a field system (DU001-023) within the proposed development area. The proposed development area contained Fields 2-9. Survey in Fields 4 and 5 (Areas 4A - 5B) determined the likely northern, eastern and western limits of a large settlement complex (DU001-023, Figure 14.2) of early medieval origin. A series of conjoined enclosures were identified in Field 6, Area 6D, suggestive of prehistoric settlement. An enclosure measuring c. 30m in diameter, was recorded in Field 8, Area 8B. Further areas of possible archaeological potential were indicated close to the western edge of Area 4A, and in Areas 8C.

In 2007, a detailed programme of archaeological testing was carried out across the landscape including portions of the proposed development area (Elliot 2007a, Licence No. 07E0057, Figure 14.3). This identified 38 varied archaeological sites across the wider landscape including enclosures, pits and linear features. Within the northern portion of the site, a pit cluster that consisted of at least six pits with burnt bone inclusions was identified (DU001-022002). A large circular pit (DU001-029) was recorded c. 66m south of the northern portion of the proposed development area, which contained a charcoal-rich fill. A flint blade was recovered from the fill suggesting a prehistoric date.

Pre-planning archaeological testing (Bennett 2021:074, Licence No. 21E0298) was carried out within the northern development area in 2021, designed to target field system DU001-023 and enclosure DU001-033 (Figure 14.2). Testing confirmed the presence of substantial archaeological features in trenches T14-T20 inclusive, which corresponded with the concentration of anomalies representing field system DU001-023. No dateable finds were recovered from any of the investigated features, but the field system most likely dates to the early medieval period. Associated with, but outside of the main concentration, there were less substantial archaeological features present in trenches T10 and T11 and possible archaeology in the form of linear ditch/gully-type features present in trenches T4, T5 and T8. There were no features of archaeological interest identified in trenches T2 and T3 in the location of the possible enclosure indicated in the geophysical survey. The presence of a possible ditched enclosure (DU001-033) indicated in aerial photography was confirmed in T1 within the proposed development area and dates to either the Bronze Age or the early medieval period.

Figure 14.2: Results of geophysical survey (Nicholls and Shiel 2005, Licence No. 05R0137) and test trenches (Licence Nos. 07E0057 and 21E0298)

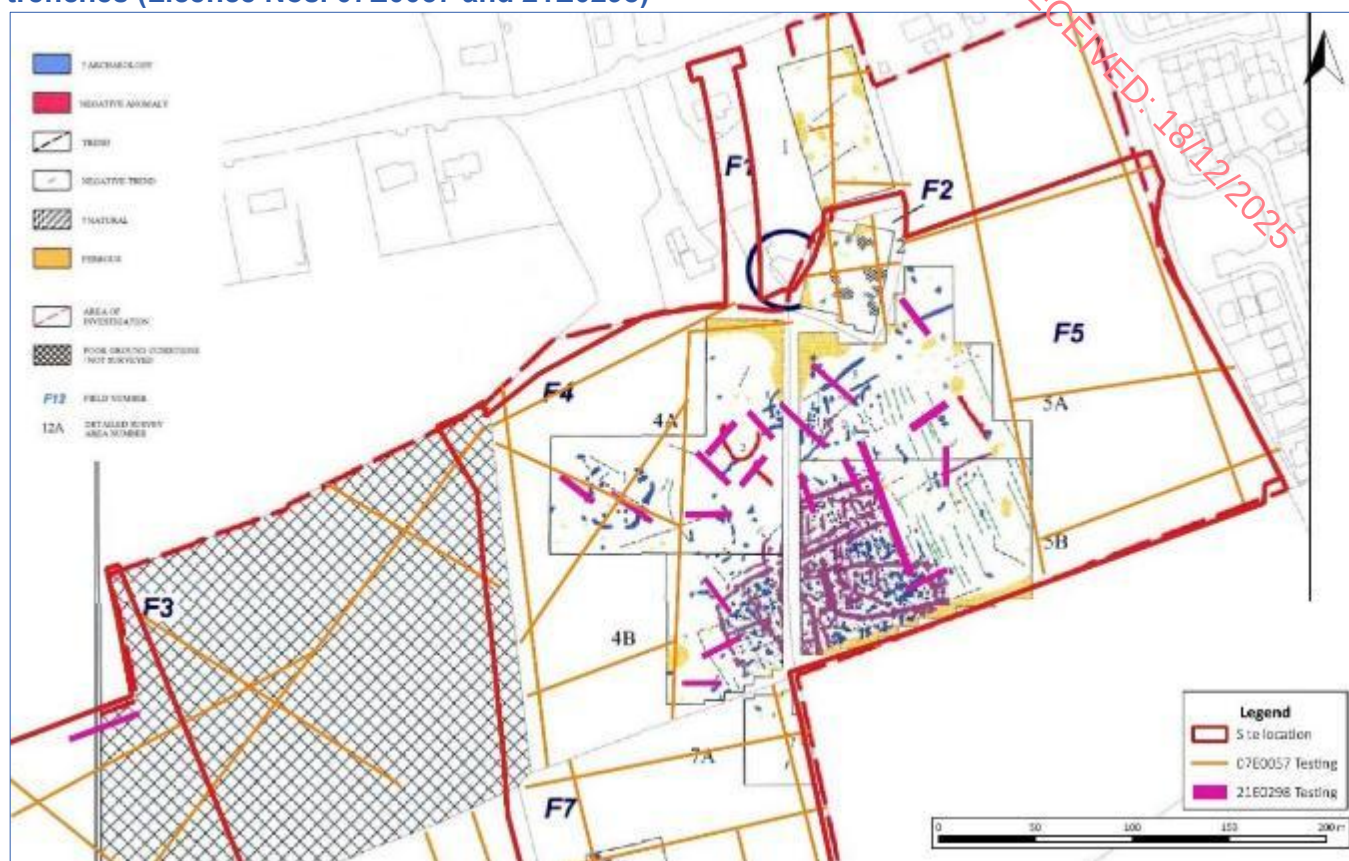


Figure 14.3: Layout of test trenches (orange and magenta) (Licence Nos. 07E0057 and 21E0298)



A number of archaeological investigations have been carried out in the study area of the potential development plans and these are described below.

Three of the sites identified during testing under licence 07E0057 were archaeologically excavated in 2018 (as evidenced by Google Earth coverage dating to 2018). The published excavation summary (Bennett 2018:822, Licence No. 18E0238) does not include a cross-reference to the testing IDs assigned to the sites when initially identified. The investigations identified a number of scattered pits, post holes and some linear ditches. Some probable Neolithic flints were recovered, indicating the activity is likely to be prehistoric in date. These areas were located to the immediate south and southeast of the proposed development area.

An assessment was undertaken in advance of the construction of a housing development to the immediate north of the proposed development area. The assessment took the form of a geophysical survey (Licence No. 07R0188) followed by excavations (Bennett 2007:423, Licence No. 07E0933). Only one area of archaeological potential was noted, consisting of three ditches, two of them curving, containing pale grey clay fills.

Pre-planning testing (Bennett 2008:455, Licence No. 08E0528) was carried out at a site at Flemington Lane to the north of the recorded holy well (DU001-004). Archaeology was discovered in Trenches 4, 7 and 9, where features of medieval date were revealed. In Trench 4 three linear features were exposed

producing medieval pottery including a fragment of Leinster cooking ware. In Trench 7, another three linear features were uncovered and one in Trench 9 produced medieval pottery. In fields north of Flemington Lane a geophysical survey was conducted but failed to reveal anything of archaeological significance (Licence No. 15R0022).

Excavation was carried out on a site at Clonard or Folkstown Great as part of the Bord Gáis Éireann Pipeline to the West project (Bennett 2002:0494, Licence No. 02E0298). Excavation revealed the remnants of a circular structure (a round house with a porch-like entrance), a small feature with a marked concentration of stake-holes nearby and two outlying hearths. A number of features were also revealed to the south-east and west of the house. These included five natural depressions, or shallow irregular cuts, in the subsoil, in which deposits of charcoal-flecked habitation soil had accumulated. Two concentrations of some 30 stake-holes were also identified to the west of the house. Finds from the house included a small, polished porcellanite axehead, five flint waste flakes and angular fragments, and three sherds of prehistoric pottery, putatively dated to the middle Bronze Age.

Excavation was carried out at Flemington c. 36m south of the development area (Elliot 2007b, Licence No. 07E0361). The earliest activity on the site was represented by a large curving ditch, which may have enclosed the hilltop and appears to have dated to the middle Bronze Age. Finds from this phase included four barbed and tanged chert arrowheads. Domestic structural evidence was found on the northerly high ground of the site and, while this was stratigraphically later than the earliest Bronze Age phase and truncated by medieval features. The evidence was composed of substantial post-holes with packing stones in situ, shallow possible plank slots and internal stake hole divisions. There appeared to be two rectangular structures, both 10m by 4.5m in dimension and orientated north-west to south-east. One of these had a hearth at its northern end and a number of internal pits. Small metalworking pits were uncovered to the south, where small-scale ironworking appears to have been carried out. There were also two kilns excavated on the site and one of these was cut into the fill of a ditch. A souterrain was also uncovered in the northern extent of the site.

A programme of archaeological test trenching (Whitaker 2024, Licence No. 24E0590) targeting geophysical anomalies (Leigh 2024, Licence 24R0031) was carried out at a site c. 120m northeast of the proposed development area. Test trenching confirmed that the potential archaeological anomalies recorded during the geophysical survey were archaeological in nature (AA1-4). The features identified are representative of Bronze Age burnt mound/ fulacht fia activity and a single northwest-southeast oriented linear ditch. The location of the archaeological remains, adjacent to a watercourse, is typical for the landscape context of this site type.

A geophysical survey was carried out in advance of the North-West Balbriggan Northern Distribution Road (Nicholls 2007, Licence No 07R0242). It returned responses of a possible burnt mound or fulacht fia.

The remains of the ditch and pit (DU005-117) of Bronze Age date were identified during an assessment along the route of a proposed Parkway infrastructure c. 243m east of the development area site (Bennett 2008:380, Licence No. 08E0290). Archaeological testing had previously been undertaken along the centreline of the proposed roadway under licence number 08E0106 revealing one feature archaeological significance.

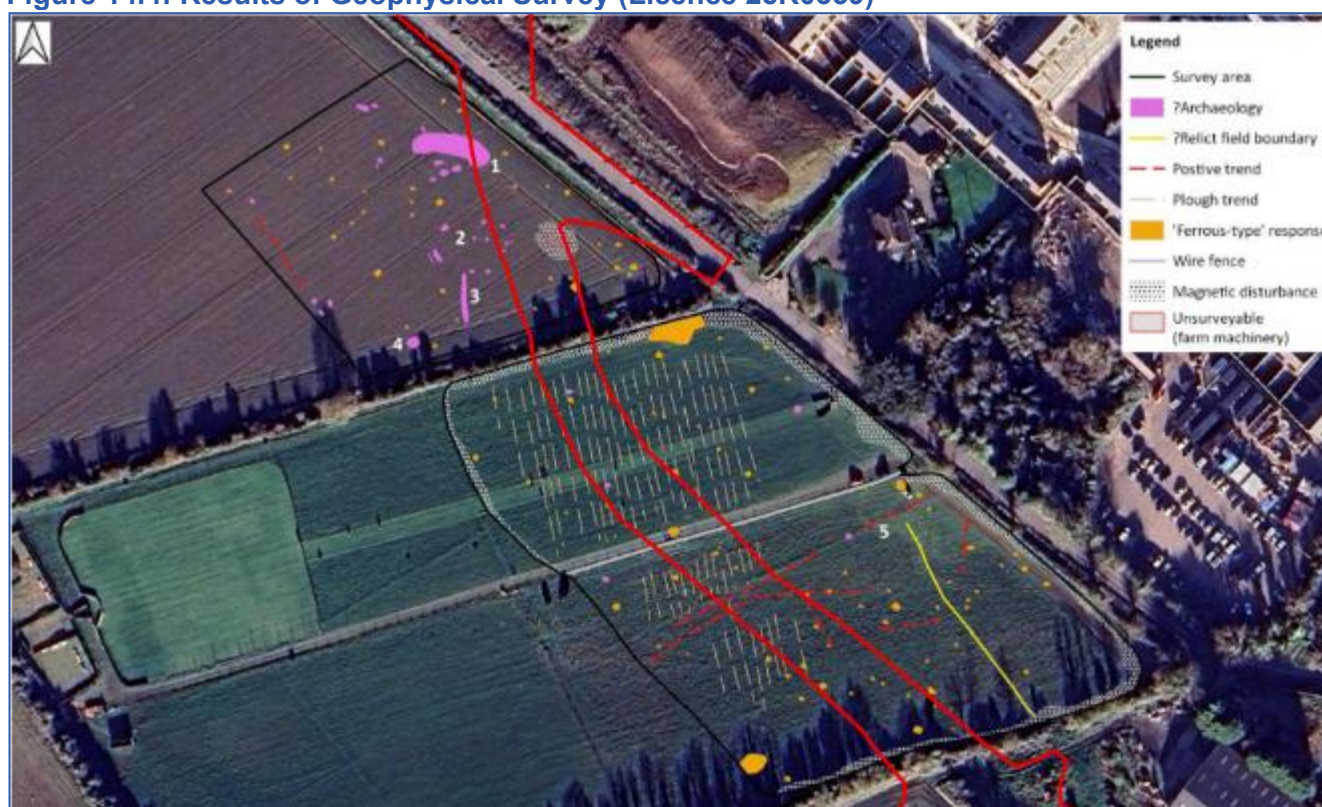
14.3.3 GEOPHYSICAL SURVEY

In September 2025 geophysical survey was carried out within the southern portion of the proposed development area, where a new road is proposed (Dowling 2025, Licence 25R0359, Figure 14.4, Table 14.3). Five anomalies of archaeological potential were identified during the course of the survey, one of which is located partially within the proposed development area (Anomaly 1).

Table 14.2: Geophysical Survey Results

Anomaly No.	Form/nature of Anomaly:	Potential Source:	Interpretation:
1	Ovaloid area of strong magnetic response	Possible archaeology/modern/natural	Possible burnt area (c.25m NW/SE by 7m NE/SW). Archaeological interpretation is tentative. Modern (e.g., agricultural) origin also possible. Alternatively, anomaly may reflect near-surface volcanic geology.
2	Cluster of 'pit-type' and short 'ditch-type' responses	Possible archaeology/modern/natural	Possible pits/spreads and ditch segments. May represent part of a structure of some kind and relate to [3]. Speculative interpretation. Modern (i.e., agricultural) and/or natural origin also conceivable.
3	Short 'ditch-type' response	Possible archaeology/modern/natural	Potential ditch/trench. Mapped for about 15m in max. length NE/SW. May relate to possible 'pit cluster' [2] to NE. Precise nature and significance unknown.
4	Large 'pit-type' response	Possible archaeology/modern/natural	Possible pit/deposit (c.3.5m in diameter). Magnetic strength (up to 41 nT) suggests presence of burnt or fired material in its fill.
5	Weak positive trend	Agricultural	Relict field boundary. Recorded on historic mapping.

Figure 14.4: Results of Geophysical Survey (Licence 25R0359)



14.3.4 CARTOGRAPHIC ANALYSIS

14.3.4.1 Sir William Petty, Down Survey, Barony of Balruddery, Parish of Balruddery, c. 1655.

The proposed development area is located within the townlands of '*Big Foulkstonne*' and '*Fleiningtonne*' on the barony map or '*Great Fowcktowne*' and '*Flemming's-Towne*' on the parish map. No details are depicted within the site; however, a road that is orientated northwest–southeast is depicted traversing '*Great Fowcktowne*' and continues north-south through '*Flemming's-Towne*'. This is likely to represent Clonard Road. The terroir records that the proprietor of the 180-acre townland of '*Great Fowcktowne*' was '*Peter Hufsey of Westowne*' and that the 265 acres of '*Flemingtowne*' were owned by Matthew Barnwell of Bremore.

14.3.4.2 John Rocque's Map of the City and County of Dublin, 1760 (Figure 14.5)

The proposed development area is depicted within several fields in the vicinity of Clonard Road. The Clonard Brook is marked to the east and several structures depicted fronting onto the road.

Figure 14.5: Extract from Rocque's map of 1760 showing the proposed development area

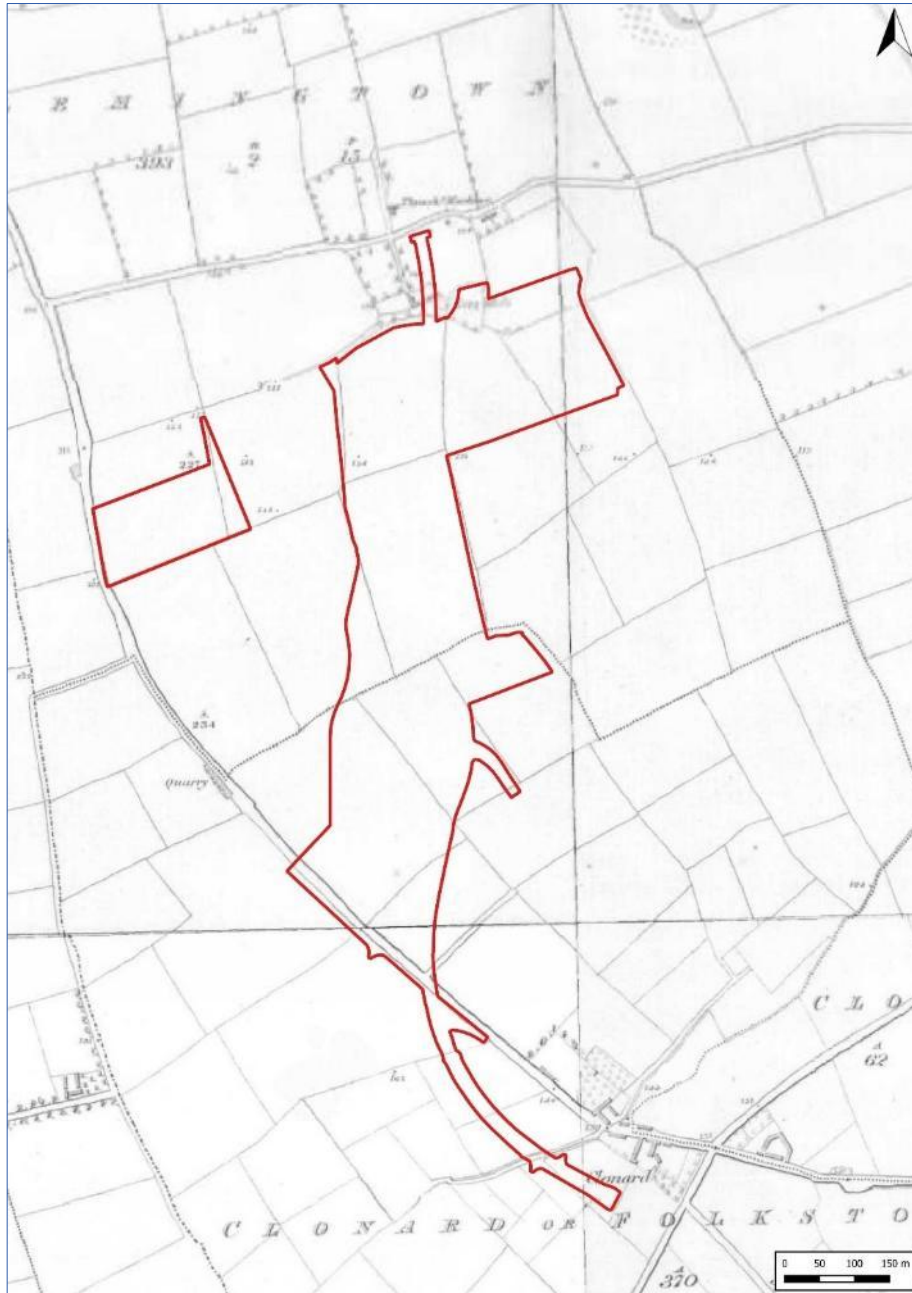


14.3.4.3 First Edition Ordnance Survey Map, 1843, scale 1:10,560 (Figure 14.6)

This is the first accurate historic mapping coverage of the area containing the proposed development area. The overall site is depicted within 15 fields to the east of Clonard Road. At the northern end of the site a

structure is marked to the immediate north of the depicted Lady well (DU001-004), which is also within the development area. The remaining parts of the development area are within open fields within the townlands of Flemington and Clonard or Folkstown Great.

Figure 14.6: Extract from the first edition OS map (1843), showing the proposed development area



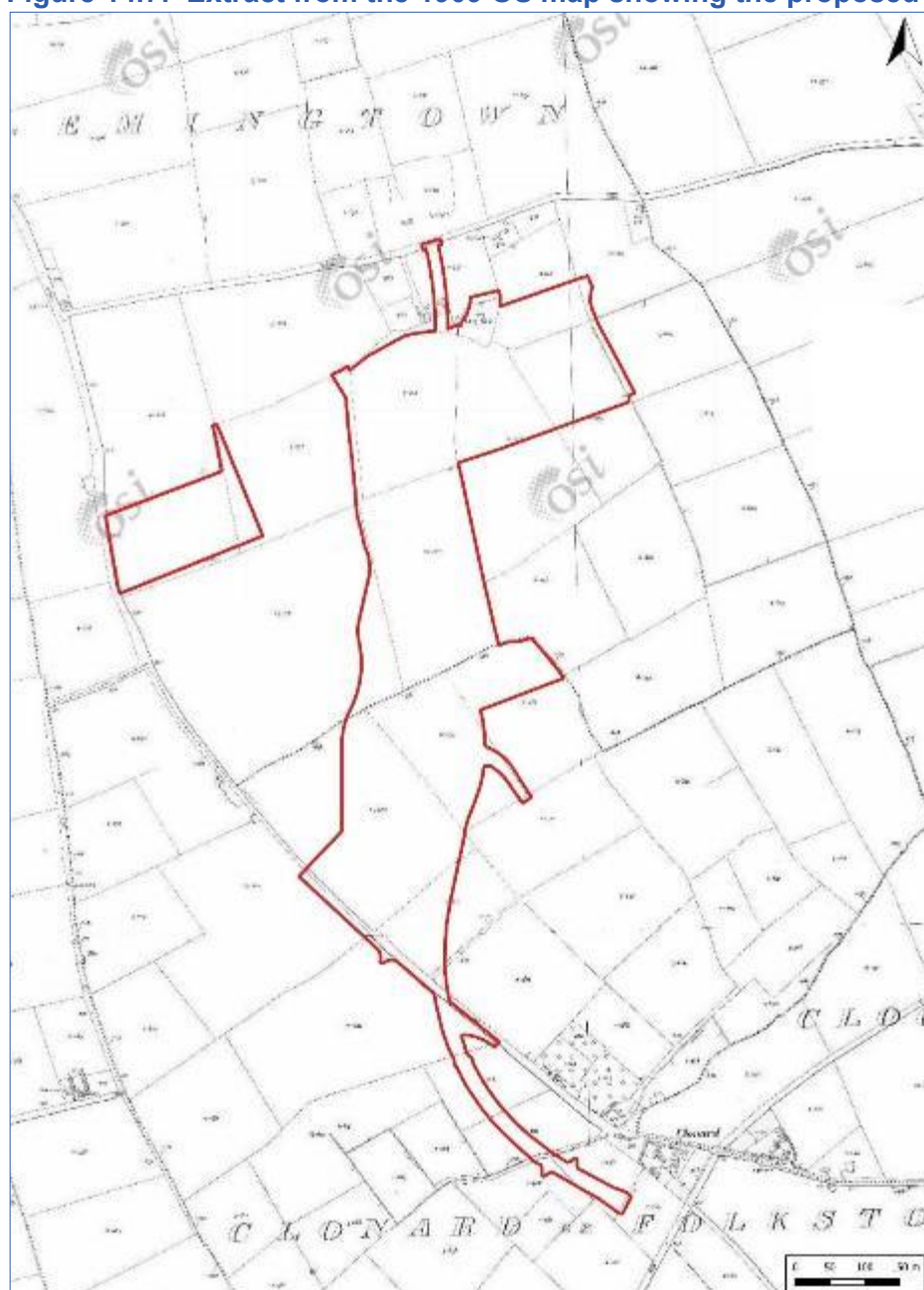
14.3.4.4 Second Edition Ordnance Survey, 1871, scale 1:10,560

There are no major changes of note within the cartography of this map that relate to the proposed development area.

14.3.4.5 Ordnance Survey Map, 1909, scale 1:2,500 (Figure 14.7)

By the time of this map, the single structure within the northern site remains extant albeit has slightly expanded in size and a well is now depicted. There are no further significant changes within the proposed development area.

Figure 14.7: Extract from the 1909 OS map showing the proposed development area



14.3.5 COUNTY DEVELOPMENT PLAN

14.3.5.1 Record of Monuments and Places

The Fingal Development Plan (2023–2029) recognises the statutory protection afforded to all Record of Monuments and Places (RMP) sites under the National Monuments Legislation (1930–2014). The development plan lists a number of aims and objectives in relation to archaeological heritage (Appendix G Volume III of the EIAR).

There are 17 recorded archaeological sites within the study area, of which six are located within the proposed development area (Table 14.2; Figure 14.1; Appendix 14.1, Appendix G, Volume III of the EIAR). These recorded monuments consist of two enclosures (DU001-033 and DU001-027), an excavation and pit (DU001-022001-2), a field system (DU001-023) and a miscellaneous excavation (DU001-026). None

of these sites are protected as National Monuments or subject to Preservation Orders. Seven of the archaeological sites in the study area exist as record only, as they have been subject to archaeological excavation.

Figure 14.8: Recorded Archaeological Sites in the Study Area

RMP No.	Townland:	Classification	Distance from proposed development:
DU001-022001	Flemingtown	Excavation - miscellaneous	0m
DU001-022002	Flemingtown	Pit	0m
DU001-023	Flemingtown	Field system	0m
DU001-026	Flemingtown	Excavation - miscellaneous	0m
DU001-033	Flemingtown	Enclosure	0m
DU001-027	Clonard or Folkstown Great	Enclosure	0m
DU001-004	Flemingtown	Ritual site - holy well	To the immediate north
DU001-028	Clonard or Folkstown Great	Excavation – miscellaneous (Record Only)	c. 14m south
DU001-015-017	Flemingtown	Enclosure/ Industrial site/ Kiln - corn-drying (Record Only)	c. 32m east
DU001-024	Flemingtown	Enclosure (Record Only)	c. 32m east
DU001-014	Flemingtown	House – Neolithic (Record Only)	c. 36m east
DU001-032	Flemingtown	Ring-ditch	c. 39m southwest
DU001-029	Clonard or Folkstown Great	Pit (Record Only)	c. 66m south
DU001-025	Flemingtown	Enclosure	c. 80m west (incorrectly plotted on SMR map)
DU002-021	Clonard or Folkstown Great	Burnt spread (Record Only)	c. 231m north (incorrectly plotted on SMR map)
DU005-117	Clogheder	Excavation - miscellaneous	c. 243m east

14.3.5.2 Record of Protected Structures

The Fingal Development Plan 2023-2029 recognises the value of the built heritage and is committed to the protection and enhancement of this heritage by providing measures for the protection of architectural heritage. These include the establishment of a Record of Protected Structures (RPS) and the designation of Architectural Conservation Areas (ACAs).

There are no protected structures included on the RPS within 250m of the proposed development area.

14.3.5.3 Architectural Conservation Areas

An Architectural Conservation Area (ACA) is a place, area, group of structures or townscape, which is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or contributes to the appreciation of a protected structure. An Architectural Conservation Area may or may not include protected structures. In an ACA, protection is placed on the external appearance of such areas or structures. The proposed development area is not located within an ACA and none are recorded in the 250m study area.

14.3.6 NATIONAL INVENTORY OF ARCHITECTURAL HERITAGE

14.3.6.1 Building Survey

A review of the architectural survey was undertaken as part of this assessment and included buildings within 250m. There are no NIAH structures within 250m of the proposed development area.

14.3.6.2 Garden Survey

The first edition Ordnance Survey map of County Dublin (1843) shows the extent of demesne landscapes as shaded portions of land within the study area. These were established as a naturalised landscaped setting for the large houses of the landed gentry. No demesne landscape has been recorded within the proposed development area based on the first edition Ordnance Survey map. The closest demesne landscape (Garden Survey 2186) is located c. 1.2km east and is associated with Tankard Ville (RPS 0016).

14.3.7 PLACENAME ANALYSIS

Townland and topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They also provide information on the history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830s and 1840s when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and Logainm.ie.

A description and possible explanation of each townland name in the environs of the proposed development area is provided in Table 14.4.

Table 14.3: Toponymy of local townlands

Placenames	Origin	Derivation	Possible Meaning
Clogheder	<i>Irish</i>	<i>Cloch Ruairí</i>	Eder's stone
Tankardstown	<i>English</i>	-	Tinkers town
Bremore	<i>Irish</i>	<i>Brí Mhór</i>	The big brae, or hill
Flemingtown	<i>English</i>	<i>Baile an Phléimeannaigh</i>	Flemmings town
Folkstown Little	<i>English</i>	-	Folks town
Clonard	<i>Irish</i>	<i>Cluain Ard</i>	High meadow
Balscaddan	<i>Irish</i>	<i>Baile Scadán</i>	Town of the herrings

14.3.8 TOWNLAND BOUNDARIES

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 means 'the land forming an estate or manor' (Culleton 1999, 174).

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bog are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century when land documentation records began. 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 townland boundary between Clonard or Folkstown Great to the south and Flemingtown to the north traverses the proposed development area. The townland boundary is extant within the proposed development area as a field boundary and constitutes a cultural heritage feature.

14.3.9 CULTURAL HERITAGE SITES

The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architecture. However, it also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period.

No specific cultural heritage sites, with the exception of those sites described above, were identified during the course of this assessment.

14.3.10 TOPOGRAPHICAL FILES OF THE NATIONAL MUSEUM OF IRELAND

Information on artefact finds from the study area in County Dublin has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area. No stray finds are recorded from within the proposed development area or the immediate environs.

14.3.11 AERIAL PHOTOGRAPHIC ANALYSIS

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2005–2024) and Bing Maps revealed that the proposed development area remained largely as greenfield from 1995. Imagery from 1995 (OSI) showed two structures adjacent to the holy well (DU001-004) within the north of the proposed development area, which remain extant. The Taylor Hill development (Phase 1) is depicted on imagery from 2006 to 2008 (Google Earth) to the immediate east with trackways evident through the development area in 2013 (Google Earth). The southern half of a circular enclosure within the western portion of the proposed development area (DU001-033) is evident in imagery from 2018, along with enclosure DU001-027. Other linear and curvilinear cropmarks to the east and west associated with the enclosure are also visible. The Google Earth imagery (2019-2024) show the construction of the adjacent sports pitch and the associated access road which traverses the proposed development area.

14.3.12 FIELD INSPECTION

The field inspection sought to assess the site, its previous and current land use, the topography and any additional information relevant to the report. During the course of the field investigation the proposed development area and its immediate surrounding environs were inspected (Figure 14.1).

The proposed development lands are formed by a number of fields, which were formerly under arable production. The development area is located to the west and north of the Phases 2-4 of the Taylor's Hill development, with a recently constructed sports ground located at the centre of the site (outside of the development lands). This is accessed via a stretch of newly constructed road, which bisects the development lands in an east-west direction.

The development lands include one field to the west of the sports ground, which occupies an elevated position and is bound by a local road to the west. A recorded enclosure (DU001-033) is partially located in the northeast corner of the field and this is the highest point of the field with open, extensive views in all directions (Plate 14.1). The remainder of the field slopes gently in all directions, with the land falling away to the north and east (Plate 14.2).

The southern portion of the development area is formed by a large arable field that slopes gently to the southeast (Plate 14.3). A recorded enclosure (DU001-027) is located within the proposed development area, but this does not possess any upstanding remains. Phase 3 and 4 of the Taylor Hill development is currently under construction to the southeast of this area.

The two fields to the north of the Phase 3 construction and the southern portion of the development area are formed by former arable fields that slope gradually to the east (Plates 14.4 and 14.5). These lands are bound to the north by the access road to the sports ground and bounded to the east by residential development.

To the north of the access road to the sports ground the development area is formed by a two large former arable fields. The field to the immediate east of the recently constructed sport grounds slopes gently to the east before levelling out (Plate 14.6). The south-eastern portion of this field contains part of the probable early medieval settlement, shown in the 2005 geophysical survey (Figure 14.2) and subject to testing in 2021 (Plate 14.7). The site possesses no upstanding remains but occupies level terrain, which is sheltered by the higher ground to the west. The site of this settlement extends into the field to the east (Plate 14.8) and occupies a relatively level area before the ground falls away again gently to the north and east (Plate 14.9).

In the northern part of the proposed development area the site of a holy well (DU001-004) is located to the immediate north of the development area, although the remains of the well were not visible during the inspection, being very overgrown (Plate 14.10). This site is located adjacent to a small paddock, which contains DU001-022001-2 (excavation and pit). Given the fact these records are adjacent to one another, it is likely they represent one archaeological site located within the small paddock area.

No previously unrecorded sites of archaeological potential were noted during the course of the field inspection and with regards to the recorded archaeological sites, none of these possess upstanding remains. It is possible that the recorded holy well possesses surface remains, but the whole site is completely overgrown.

Plate 14.1: Site of enclosure (DU001-033), facing north



Plate 14.2: West field of development area, facing southwest



Plate 14.3: Southern portion of development area, facing east



Plate 14.4: Eastern portion of the development area, facing east



Plate 14.5: Development area to south of sports ground access, facing north



Plate 14.6: Development area to the east of the sports ground, facing southwest



Plate 14.7: Location of the western section of DU001-023, facing east



Plate 14.8: Location of eastern section of DU001-023, facing south



Plate 14.9: Location of eastern section of DU001-023, facing south



Plate 14.10: Location of holy well (DU001-004), facing north



14.4 SUMMARY

This assessment has been carried out in order to analyse the archaeological potential of future residential development lands at Flemington, Clonard or Folkstown Great and Cloghader, Balbriggan, County Dublin. There are 17 recorded archaeological sites within the study area, of which six are located within the proposed development area. These recorded monuments consist of two enclosures (DU001-033 and DU001-027), an excavation and a pit (DU001-022001-2), a field system (DU001-023) and a miscellaneous excavation (DU001-026).

Of these sites, the field system (DU001-023) is the most significant, as it is likely to represent early medieval settlement and occupies a relatively large area in the northern part of the development area. This is likely to be activity associated with early medieval archaeology that was excavated prior to residential development to the east of this site.

The holy well (DU001-004) is located to the immediate north of the proposed development area and the site is now very overgrown. This is adjacent to DU001-022001-2 (excavation and pit), where more subtle archaeological remains of probable prehistoric date, were identified during test trenching in 2007.

Enclosure DU001-033 is partially located in the western portion of the development area and extends into the field to the north. The site does not possess upstanding remains but occupies a high point in the landscape with open and extensive views in all directions.

Enclosure DU001-027 is located in the southern portion of the proposed development area and represents either an early medieval ringfort or a Bronze Age enclosure.

The recorded miscellaneous excavation (DU001-026) comprises a cluster of pits and possible structure, which was identified during testing in 2007. The remains have not been dated.

There are no recorded architectural sites of merit within the proposed development area or within the 250m study area.

A review of the Excavations Bulletin (1970–2025) has revealed that a geophysical survey was carried out within portions of the proposed development area, followed by an extensive programme of archaeological testing in 2007. This work identified 38 varied archaeological sites including enclosures, pits, linear features, and burnt spreads across the wider landscape, including the excavation and pit (DU001-022001-2) and the remains listed as DU001-026. At this time the early medieval field system (DU001-023) was not tested, but test excavations were conducted at this located in 2021 within the proposed development area. Testing confirmed the presence of outlying features associated with this site and also confirmed the presence of the recorded enclosure site (DU001-033), in the western portion of the development area.

A geophysical survey was carried out in the southern part of the proposed development area in 2025, where a new road is proposed. Five potential archaeological anomalies were recorded, one of which is partially located within the proposed development area. This may represent the remains of a burnt mound.

A field inspection has been carried out as part of this assessment, which confirmed the results of the overall archaeological assessment. None of the recorded archaeological sites were found to possess upstanding remains. It is possible that the holy well (DU001-004) may be extant, but the location is heavily overgrown.

14.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development will consist of the construction of 815 no. dwellings, provision of the C-Ring Road between Flemington Lane and the Clonard Road roundabout, open space, community floorspace (c. 730 sq. m) in a 2 storey building, retail floorspace (c. 425 sq. m) at ground floor of Block F, and 2 no. creches (overall combined c. 1,060 sq. m) on an overall site area of 24.91 hectares comprising 610 no. houses, 194 apartments & 11 no. later living dwellings. The development will also include Class 1 open space in the western portion of the development (2.39 hectares) as well as a series of public open spaces throughout the site comprising 2.87 ha., car parking, cycle parking and all ancillary site development, construction, and landscaping works.

Figure 14.9: Plan of northern section of the proposed development showing the location of DU001-004, DU001-022001-2, DU001-023 and DU001-026



Figure 14.10: Plan of southern section of the proposed development showing the location of DU001-027



Figure 14.11: Plan of western section of the proposed development showing the location of DU001-033



Figure 14.12: Plan of DU001-023 Field System showing core area (in magenta) preserved within green space



14.6 POTENTIAL EFFECT OF THE PROPOSED DEVELOPMENT

14.6.1 CONSTRUCTION PHASE

14.6.1.1 Archaeology

Field system (DU001-023) is likely to represent early medieval settlement and occupies a relatively large area in the northern part of the development area. This is likely to be activity associated with early medieval archaeology that was excavated prior to residential development to the south of this site. As shown on Figure 14.8, a large portion of this site will be preserved in-situ within greenspace associated with the development. Further detail is shown on Figure 14.11 where the core of the archaeological site is shown in pink. Some features to the east of the site will be subject to direct, negative (permanent) impacts, which are considered of moderate significance of effect.

Some direct impacts may occur in relation to the landscaping of this area, arising from the construction of the greenspace (tree planting, footpath construction). Prior to the application of mitigation, these have the potential to be direct, negative (permanent) impacts, which are considered of significant significance of effect.

The holy well (DU001-004) is located to the immediate north of the proposed development area and the site is now very overgrown (Figure 14.8). The site will be retained in-situ, but it remains possible that it may be subject to inadvertent direct, negative (permanent) impacts arising from passing construction activity. Effects have the potential to be of significant significance of effect.

Also shown on Figure 14.8 is the position of DU001-022001-2 comprising probable prehistoric activity identified during previous archaeological testing. Ground disturbances in this area will result in a direct, negative (permanent) impact on these remains. Effects have the potential to be of moderate significance of effect.

The recorded miscellaneous excavation (DU001-026, Figure 14.8) comprises a cluster of pits and possible structure, which was identified during testing in 2007. The remains have not been dated. Ground disturbances in this area will result in a direct, negative (permanent) impact on these remains. Effects have the potential to be of moderate significance of effect.

Recorded enclosure DU001-027 is shown on Figure 14.9. Ground disturbances in this area will result in a direct, negative (permanent) impact on these remains. Effects have the potential to be of very significant significance of effect.

Enclosure (DU001-033) is partially located in the western portion of the development area (Figure 14.10) and extends into the field to the north. The site does not possess upstanding remains and will be preserved in-situ as part of a greenspace development. Some direct impacts may occur in relation to the landscaping of this area, arising from the construction of the greenspace (tree planting, footpath construction). Prior to the application of mitigation, these have the potential to be direct, negative (permanent) impacts, which are considered of significant significance of effect.

It remains possible that unrecorded archaeological features may be present within the proposed development area outside the footprint of the test trenches excavated in 2007 and 2021. Groundworks associated with the proposed development have the potential to result in direct, negative (permanent) impacts. Prior to the application of mitigation, the significance of effect may vary from moderate to significant (dependent on the nature of any remains that are identified).

Geophysical survey in the southern portion of the proposed development area has identified one archaeological anomaly partially within the proposed development. Groundworks associated with the proposed development have the potential to result in direct, negative (permanent) impacts on this feature. Prior to the application of mitigation, the significance of effect may vary from moderate to significant (dependent on the nature of the remains).

14.6.1.2 Architectural

No potential negative impacts upon the architectural resource are predicted as a result of the construction of the proposed development.

14.6.1.3 Cultural Heritage

The Flemington-Clonard or Folkstown Great townland boundary traverses the proposed development area. It survives as a field boundary. It is proposed to largely preserve this boundary within the proposed development; however, small sections of the boundary will be removed to facilitate roadways. This represents a direct negative (permanent) impact on the cultural heritage resource of slight significance of effect.

14.6.2 OPERATIONAL PHASE

During the operation of the development, it is possible that the two preserved monuments (DU001-033 Enclosure and DU001-023 Field System) will be subject to inadvertent direct negative (permanent) impacts, arising from inappropriate groundworks in the greenspaces. Effects, prior to the application of mitigation, may vary from moderate to very significance.

No operational impacts are predicted upon the architectural or cultural heritage resource.

14.7 'DO-NOTHING' IMPACT

If the proposed development were not to proceed there would be no negative impact on the archaeological, architectural, or cultural heritage resource of the subject lands or cumulatively with other developments.

14.8 AVOIDANCE, REMEDIAL, AND MITIGATION MEASURES

14.8.1 CONSTRUCTION PHASE

14.8.1.1 Archaeology

It is acknowledged that preservation in-situ of archaeological remains is the preferred method in which to conserve the archaeological resource. As detailed above, the design of the proposed development will allow for the preservation of the central concentration of features associated with field system (DU001-023). Eastern associated features will be subject to preservation by record prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoHLGH.

With regards to the greenspace containing the field system, the core area will be fenced off from construction activity and all footpaths across the area will be laid as non-dig. In addition, no deep rooting trees will be planted in the greenspace and services will avoid the area.

The site of the holy well (DU001-004) will be cordoned off during construction, due to its location immediate to the proposed development area. This will ensure that the site is not impacted by passing construction traffic.

Whilst preservation in-situ is the preferred manner in which to conserve the archaeological resource, it will not be possible to preserve DU001-022001-2 (probable prehistoric activity), DU001-026 (miscellaneous excavation) in-situ. These features will be subject to preservation by record prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoHLGH.

Similarly, it will not be possible to preserve recorded enclosure site DU001-027. This is due to the required density associated with the development and the fact a large greenspace has already been established for the recorded field system. As such, the enclosure site will be subject to preservation by record. This will be carried out under licence to the National Monuments Service of the DoHLGH.

Enclosure (DU001-033) will be preserved in-situ, and the extent of the site will be fenced off during construction to avoid inadvertent impacts from construction. No trees or deep rooting plants will be planted in the area containing the monument and the passing footpath will be laid by no dig methods.

All topsoil stripping associated with the proposed development be monitored by a suitably qualified archaeologist. This will be carried out under licence from the National Monuments Service of the DoHLGH. If any further features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

Prior to the commencement of construction, a programme of test trenching will be carried out within the southern portion of the proposed development area. This will be carried out under licence from the National Monuments Service of the DoHLGH. If any further features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

14.8.1.2 Architectural

As there are no predicted impacts on the architectural resource, no mitigation is deemed necessary.

14.8.1.3 Cultural Heritage

All excavations for interventions through the Flemington-Clonard or Folkstown Great townland boundary will be subject to archaeological monitoring, with a full record of the removed sections made. This will be carried out under licence from the National Monuments Service of the DoHLGH.

14.8.2 OPERATIONAL PHASE

A full Conservation Management Plan will be compiled in order to ensure the appropriate management and ongoing conservation during the operation phase of DU001-033 Enclosure and DU001-023 Field System. This will include a strategy for heritage interpretation for the sites along with details regarding proscribed activity within the areas. The contents of the plan will be developed in consultation with Fingal County Council and the National Monuments Service of the DoHLGH.

14.8.3 'WORST-CASE' SCENARIO

Under a worst-case scenario, the proposed development would disturb previously unrecorded and unidentified archaeological deposits and artefacts without proper excavation and recording being undertaken.

14.9 PREDICTED IMPACTS (EFFECTS) OF THE PROPOSAL

14.9.1 CONSTRUCTION PHASE

Following the implementation of mitigation measures, no significant negative impacts are predicted upon the archaeological and cultural heritage resource.

No impacts are predicted upon the architectural heritage resource as a result of the construction of the proposed development.

14.9.2 OPERATIONAL PHASE

Following the completion of mitigation measures, there will be a significant positive effect on DU001-033 Enclosure and DU001-023 Field System, as the sites will be preserved in-situ with appropriate heritage interpretation strategy.

14.10 MONITORING

The mitigation measures detailed above would also function as a monitoring system to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

14.11 REINSTATEMENT

Reinstatement is not applicable.

14.12 POTENTIAL CUMULATIVE IMPACTS/EFFECTS

The potential cumulative projects are contained in chapter 17, in the vicinity of the proposed development. All proposed developments within the study area have been considered with regards to potential cumulative impacts on the archaeological, architectural and cultural heritage resource. As all archaeological remains within the proposed development area will be preserved in-situ or by record, no cumulative impacts have been identified.

14.13 DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION#

No difficulties were encountered during the compilation of this chapter.

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15.0 RISK MANAGEMENT

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has included 'Risk Management' as a new chapter to be addressed. Article 3 of the new EIA Directive requires that the EIA shall identify, describe and assess in the appropriate manner, the direct and indirect significant effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage, and landscape deriving from (amongst other things) the *"vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned"*.

This chapter was prepared by Eamonn Doran MRIAI / RIAI PSDP Accredited, of Doran Cray Architects who are registered architectural practice with over 20 years' experience of residential projects, including previous phases of development (1-4) at Ladywell, Balbriggan and elsewhere.

15.1 STUDY METHODOLOGY

The starting point for the scope and methodology of this assessment is that the proposed development has been designed and will be constructed in line with best practice and, as such, major accidents and / or natural disasters will be very unlikely. The identification, control, and management of risk is an integral part of the design and assessment process throughout all stages of a project lifecycle. For example, a Flood Risk Assessment, prepared by Paul McGrail Consulting Engineers, was carried out. Measures to control risks associated with Construction Phase activities are incorporated into the Construction and Environmental Management Plan, prepared by Paul McGrail Consulting Engineers, contained in Appendix D Volume III of the EIAR.

The following sections set out the requirements as stated in the new EIA Directive and in the EPA Guidelines 2022 on the information to be contained in an Environmental Impact Assessment Report (EIAR). The scope and methodology presented is based on the new EIA Directive, the EPA guidelines, on other published risk assessment and on professional judgement of the consultants with this responsibility in the construction and operation of the proposed development. A risk analysis-based approach methodology which covers the identification, likelihood and consequence of major accidents and / or natural disasters has been used for the assessment. This type of risk assessment approach is an accepted methodology.

Recital 15 of the EIA Directive states that:

"In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU."

The intent of the directive is that a major accident and/or natural disaster assessment should be mainly applied to COMAH (Control of Major Accident Hazards involving Dangerous Substances) sites or nuclear installations. The proposed development in this instance is residential development on a greenfield site which when completed, will not give rise to ongoing significant risks in its operating environment.

The 2022 EPA Guidelines on the information to be contained in an EIAR refer to major accidents and/or disasters in a number of sections, as follows:

Characteristics of the Project – the guidelines state that the project characteristics should include *"a description of the Risk of Accidents – having regard to substances or technologies used."*

Impact assessment - the guidelines state that the impact assessment should include “the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)”.

Likelihood of Impacts - the guidelines state the following:

“To address unforeseen or unplanned effects the Directive further requires that the EIAR takes 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). This may be supported by general risk assessment methods or by systematic risk assessments required under other regulations e.g., a COMAH assessment.”

There are also a number of mechanisms which currently manage accidents outside of the EIA process. These would include the Construction Environmental Management Plan, which would deal with pollution risks during construction (See Chapters 5, 6 and 8 on Land, Soils, Water and Air) and risk of accidents during construction, including traffic accidents. The risk of flooding is dealt with in Chapter 6; Water. There is no risk of flooding within the site. Separately, the risk of fire is managed through ensuring the development is in full compliance with Part B of the Building Regulation 1997 – 2017 and where required, the Fire Safety Certification process, which is an integral part of the design of the proposed development.

15.1.1 SITE SPECIFIC RISK ASSESSMENT METHODOLOGY

This section identifies the potential of unplanned but potential events that could occur during construction and operation of the proposed development.

Risks are set out according to the classification of risk, taken from the Guide to Risk Assessment in Major Emergency Management (Department of the Environment, Heritage & Local Government, 2010), as follows:

Table 15.1: Risk Classification

Ranking	Classification	Likelihood
1	Extremely Unlikely	May occur only in exceptional circumstances; Once every 500 or more years
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communities; and / or little opportunity, reason or means to occur; May occur once every 100-500 years.
3	Unlikely	May occur at some time; and / or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity, reason or means to occur; may occur once per 10-100 years.
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year.

The construction phase of the proposed development may give rise to short-term impacts associated with construction traffic, migration of surface contaminants, dust, noise and littering. Secondary impacts may include resulting increased traffic arising from hauling building materials to and from the proposed development site which are likely to affect population and human health distant from the proposed

development site, including adjacent to aggregate sources and landfill sites. Potential spillage (diesel and petrol) has the potential to occur.

Construction impacts are likely to be short term and are dealt with separately in the relevant chapters of this EIAR document and will be subject to control through the Contractor's Construction & Environmental Management Plan which will include the mitigation contained in this EIAR. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts. The development will comply with all Health & Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the impact on the construction phase will be reduced.

15.1.2 OPERATIONAL PHASE

The main risk identified during operation is the risk of fire. It should be noted that the proposed uses are considered normal hazard fire risks as would be encountered in most residential developments and do not include any hazards which would be regarded as presenting an exceptional environmental fire hazard.

The fire risk mitigation for the project will comprise all fire safety measures necessary to comply with the requirements of Part B (Fire) of the Second Schedule to the Building Regulations 1997-2017. It is noted that these measures (where required) will be validated under the Building Control Act 1990-2007 through the obtaining, in due course, of statutory Fire Safety Certificates under Part III of the Building Control Regulations 1997-2018 from Fingal County Council.

15.2 RECEIVING ENVIRONMENT

The surrounding context consists of a mix of residential and agricultural. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

The purpose of the chapter is to ensure that the safety and precautionary measures necessary to protect the proposed development in the event of a major accident and / or natural disaster are identified and that appropriate mitigation measures are provided that would protect the environment in the event of such occurrences.

This chapter will identify the types of major accidents / natural disasters that the project is vulnerable to; whether major accidents or natural disasters and the responses to these give rise to significant adverse environmental impacts; the nature of these impacts and the measures needed to prevent or mitigate the likely adverse impact of such events on the environment

15.3 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The development will consist of the construction of 815 no. dwellings, provision of the C-Ring Road between Flemington Lane and the Clonard Road roundabout, open space, community floorspace in a 2-storey building, retail floorspace at ground floor of Block F, and 2 no. creches on an overall site area of 24.91 hectares comprising houses, apartments and later living dwellings. A full description is set out in chapter 2 of the EIAR.

15.4 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT (ASSESSMENT OF EFFECTS)

15.4.1 HEALTH & SAFETY/ RISKS OF MAJOR ACCIDENTS AND/OR DISASTERS

15.4.1.1 Construction Phase

It is considered that the main risks associated with the proposed development will arise during the construction phase.

Health & Safety/ Risks of Major Accidents and/or Disasters

- Risk of falling from scaffolding, ladders or unprotected edges/open voids during the construction phase.
- Risk of falling into open excavations.
- Risk of burial under earthfalls in basement excavations.
- Risk of injury from falling tools / construction materials during construction phase.
- Risk of electrocution / flooding during the foundation works. Any work around existing services.
- Risk of injury during the assembly of precast columns, stairs, façade panels, etc.

The construction phase of the proposed development may give rise to short-term impacts associated with construction traffic, migration of surface contaminants, dust, noise and littering. Secondary impacts may include resulting increased traffic arising from hauling building materials to and from the proposed development site which are likely to affect population and human health distant from the proposed development site, including adjacent to aggregate sources and landfill sites. Potential spillage (diesel and petrol) has the potential to occur.

Construction impacts are likely to be short term and are dealt with separately in the relevant chapters of this EIAR document and will be subject to control through the Contractor's Construction & Environmental Management Plan which will include the mitigation contained in this EIAR. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts. The development will comply with all Health & Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the impact on the construction phase will be reduced.

15.4.1.2 Operational Phase

The main risk identified during operation is the risk of fire. It should be noted that the proposed uses are considered normal hazard fire risks as would be encountered in most residential developments and do not include any hazards which would be regarded as presenting an exceptional environmental fire hazard.

The fire risk mitigation for the project will comprise all fire safety measures necessary to comply with the requirements of Part B (Fire) of the Second Schedule to the Building Regulations 1997-2017. It is noted that these measures (where required) will be validated under the Building Control Act 1990-2007 through the obtaining, in due course, of statutory Fire Safety Certificates under Part III of the Building Control Regulations 1997-2018 from Fingal County Council.

The measures will include inter alia:

- Provision of fire-rated walls and floors to restrict the spread of fire within and between buildings in accordance with relevant design guidance e.g. Technical Guidance Document B, BS9991, and BS9999. These measures will, in conjunction with the provision of automatic fire suppression in the taller blocks, serve to control/limit the size of conflagrations;
- Provision of early warning fire detection systems to ensure the earliest possible intervention in the event of fire occurrence;
- Use of materials which do not support fire spread with particular reference, inter alia, to internal wall and ceiling linings and external wall cladding.
- Facilities to assist the fire service including fire tender access proximate to all units, dry rising mains, and external fire hydrants
- A bespoke Fire Emergency Evacuation Plan [FEPP] will be prepared for the apartment, duplex blocks and retail spaces in advance of occupation.

- The cleaning of windows in the buildings will be undertaken by a specialist contractor on behalf of the owners management company. Window cleaning infrastructure has been designed into the scheme.
- Public lighting has been designed and incorporated as part of the scheme to ensure areas are well light for public use minimising risks to pedestrians and road users. A road safety and quality audit has also been undertaken to ensure potential risks to pedestrians and road users are designed out.

15.4.1.3 'Do Nothing' Scenario

In the do-nothing scenario, the potential risk of the proposed development causing, or being affected by a disaster and / or accident would be low, given that the site is currently an undeveloped greenfield site.

15.5 MITIGATION MEASURES

The Construction Environmental Management Plan (contained in Appendix D Volume III of the EIAR) and the Health and Safety Plan (which will be developed and included in the final Contractor's CEMP) will limit the risk of accidents during construction. Fire safety will be dealt with under the Fire Safety Code at design and construction stage. The estate management company will have responsibility for fire safety during operations. The CEMP along with the mitigation measures contained in this EIAR will be implemented as part of the construction of the project. The proposed development will involve the ground works to facilitate the proposed development. Site investigations have been carried out and have not identified any hazardous material. Further site investigation and WAC (Waste Acceptance Criteria) testing will be carried out prior to construction to inform the detailed design. In the event that any hazardous material is identified the appropriate measures will be taken in accordance with the requirements of the EPA. The excavation and movement of soil from the site will be undertaken by a registered specialist contractor and removed to a licenced facility. The following are outlined:

- Hazardous materials used during construction will be appropriately stored so as not to give rise to a risk of pollution.
- In the event of storms or snow, construction activity can be halted and the site secured. The construction activity will involve a number of potential risks, as set out below. The risks identified include traffic management, and fire strategy.
- During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant or adverse effects to the existing public road network. The vast majority of the works are away from the public road in a controlled environment. The objective of which is to minimise the short-term disruption to local residents and reduce the potential for accidents.
- Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used.
- With reference to natural disasters (e.g. flooding), the proposed development has undergone a Site Specific Flood Risk Assessment, prepared by Paul McGrail Consulting Engineers. The site is located in Flood Zone C where development and is not at risk of fluvial, pluvial or groundwater flooding.
- A Health and Safety Plan will be prepared (required by the Safety, Health and Welfare at Work (Construction) Regulations 2013) to address health and safety issues from the design stages through to the completion of the construction and maintenance phases. The Health and Safety Plan will comply with the requirements of the Regulations and will be reviewed as the development progresses.

- Safety on site will be of paramount importance. Only contractors with the highest safety standards will be selected. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated.
- Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.
- Safety briefings will be held regularly and prior to any onerous or special task. 'Toolbox talks' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.
- All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.
- Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

Table 15.2: Strategy for tackling potential risks.

1. BASIC RISK INFORMATION			2. RISK ASSESSMENT INFORMATION		3. RISK RESPONSE INFORMATION
Risk Number	Risk Description / Risk Event Statement	Responsible	Impact H / M / L	Probability H / M / L	Actions
Provide a unique identifier for risk	A risk event statement states (i) what might happen in the future and (ii) its possible impact on the project.	Name or title of team member responsible for risk	Enter H (High); M (Medium); or L (Low) according to impact definitions	Enter H (High), M (Medium) or L (Low) according to probability definitions	List, by date, all actions taken to respond to the risk. This does not include assessing the risk
1	Work which puts persons at risk of:-burial under earth falls. Risk of burial under earthfalls in trenches.	Project Supervisor Construction Stage (PSCS)	H	M	Contractor to address requirement for trench support. Excavations are to be carried out at safe slope. Refer to site investigation for same and temporary works engineer to design.
2	Scaffolding Risk of falling from scaffolding, ladders or unprotected edges/open voids during the construction phase.	PSCS	H	M	Working at height required throughout the project. Installation of scaffolding for all working at height activities to be subject to a full temporary works design submission. In order to fully Co-Ordinate any

1. BASIC RISK INFORMATION			2. RISK ASSESSMENT INFORMATION		3. RISK RESPONSE INFORMATION
					temporary works submission the Project Supervisor for the Design Process must receive the following items before reviewing any submission; A full design submission, Calculations for the design, Design Risk Assessment, Copy of designer's PI insurances, Designers CV. This submission can then be reviewed by the Permanent Works Engineer to ensure the design will not impact on the permanent structure.
3	Fire Strategy Risk of fire damage to houses or to partially complete new apartment blocks from construction activities.	PSCS/PSDP / Fire SC.	H	M	Fire strategy must be put in place in advance of start on site which must take into consideration the requirement for hot works and the provision of Hot Works Permit systems to manage Hot works when needed. A fire marshal will be required - full co-operation from site supervisors and contractors will be required.
4	Lifting Operations Work involving the assembly or dismantling of heavy pre-fabricated components. Risk of injury during the assembly of precast columns, stairs, façade panels, etc.	PSCS/PSDP	H	M	Lifting operations using cranes will be a requirement during the project. The PSDP must identify this as a risk factor ensuring the ground conditions are tested and appropriate to point loading from mobile cranes. The PSCS must ensure there is a fully risk assessed lift plan to manage all lifting operations on site.
5	Existing Utilities Work near overhead electric cables, risk of Electrocutation	PSCS/PSDP	H	M	The PSDP must highlight the existence of live overhead ESB cables on site. The sequence of work to be planned to avoid

1. BASIC RISK INFORMATION			2. RISK ASSESSMENT INFORMATION		3. RISK RESPONSE INFORMATION
					working in close proximity to the lines. The PSCS to arrange for the relocation of the lines prior to working around them. The PSCS must follow the ESB code of practice and provide a risk assessed RAMS document to manage this hazard.
6.	Construction Traffic Working adjacent to live construction and normal traffic.	PSCS/PSDP	H	M	Contractor to prepare and implement a Construction Traffic Management Plan to be agreed with the design team to ensure public safety. The contractor is to supervise vehicle movements during construction and enforce the traffic management plan.

15.6 PREDICTED IMPACTS - RISK OF MAJOR ACCIDENTS AND/OR DISASTERS

A Risk Register has been developed which contains the main risks identified with the construction and operation of the Proposed Project. These have been identified as follows:

Table 15.3: Risk Register

Risk No.	Risk Event	Possible Cause
1	Accidents during construction	Traffic accident Interaction with moving plant. Working at height /scaffolding Risk of fire Groundwater pollution Noise Dust
2	Fire during Construction	Work with timber frame construction. Hot works requirements for gas installation, balconies and roof work.
3	Lifting Operations	High winds Poor ground conditions Untrained personnel. Failures in lifting gear.
4	Fire following occupation	Inappropriate use of electrical devices / cooking etc.
5	Falls	Window cleaning

15.6.1 RISK ANALYSIS

Following identification of risks, the next stage is to analyse how likely this is to occur and the consequences, should the risk arise. This will provide a risk score, i.e. the consequences versus the likelihood of the event taking place.

Table 15.4: Risk Analysis

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score
1a	Accidents during construction	Movement of vehicles	Injury or loss of life	3	Construction accident statistics	3	Could result in loss of life	9
1b		Manual handling	Injury or loss of life	3	Construction accident statistics	3	Could result in loss of life	9
1c		Slips or falls	Injury or loss of life	3	Construction accident statistics	3	Could result in loss of life	9
1d		Ground water pollution	Impact on aquatic life, illness	1	Lack of direct pathways, controls of run-off during construction	3	Could result in environmental pollution	3
2a	Fire during Construction	Hot Works	Fire Loss of life	3	Type of construction	3	Fire could result in loss of life	3
3a	Lifting Operations	Poor planning	Loss of life	3	Construction Statistics.	3	Poor planning could result in failure of lifting gear or cranes.	9
4	Fire following occupation	Electrical equipment / cooking	Injury or loss of life	1	Causes of fire statistics	3	Could result in loss of life	3
5	Falls	Loss of balance	Injury or loss of life	1	CSO statistics	3	Could result in loss of life	3

15.6.2 RISK EVALUATION

Taking the above table, and applying it below, the red zone represents '*high risk scenarios*', the amber zone represents '*medium risk scenarios*' and the green zone represents '*low risk scenarios*.'

Table 15.5: Risk Evaluation

Likelihood Rating	Very Likely	5					
	Likely	4					
	Unlikely	3			1a – 9, 1b – 9 1c – 9, 1d – 3 4 – 3, 5 – 3		
	Very Unlikely	2					
	Extremely Unlikely	1				2a – 3	
			Minor 1	Limited 2	Serious 3	Very Serious 4	Catastrophic 5
Consequence Rating							

15.6.3 MAIN RISKS

The main risks arise during the construction period. Consequences may be limited but severe for the individuals concerned. Geographical widespread environmental consequences are not anticipated.

15.7 INTERACTIONS

There are interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management.

15.8 RESIDUAL IMPACTS

Through the implementation of mitigation measures, 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 impacts or environmental effects.

15.9 CUMULATIVE IMPACTS

Other projects in the wider area are set out in chapter 17. The cumulative impacts with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management.

The mitigation measures set out in the CEMP (Appendix D Volume III of the EIAR), which will form part of the contractor's CEMP, will ensure that the works across the elements of the overall project will be mitigated to reduce the inconvenience to residents in the area.

The cumulative interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management. The cumulative effects post mitigation are considered to be neutral, medium term, slight.

15.10 RESIDUAL IMPACTS

The risk of a major accident and/or disaster during the construction and operational phase of the proposed development is considered low. Through the implementation of mitigation measures, 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 impacts or environmental effects post mitigation are considered to be neutral, medium term and slight.

15.11 MONITORING

No monitoring associated within risks of major accidents and/or disaster is proposed during the construction or operational phases.

15.12 DIFFICULTIES ENCOUNTERED

No difficulties were encountered during the preparation of the chapter.

15.13 REINSTATEMENT

No reinstatement measures are necessary during the construction or operational phase of the project.

16.0 INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

16.1 INTRODUCTION

The purpose of this chapter is to highlight the significant interaction between environmental factors, and the cumulative impact this interaction and the proposed development has on the receiving environment. 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 subject site and this ensures that mitigation measures are incorporated into the design process.

This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000 and Part 10, and schedules 6 and 7 of the Planning and Development Regulations 2001 as amended.

Article 3(1) of the EIA Directive (2014/52/EU) states that:

‘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).’

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.

Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 23 years of experience of Environmental Impact Assessment and urban development.

Having regard to the approach taken, the aspects of the environment likely to be significantly affected by the proposed development, during both the construction and operational phases, have been considered in detail in the relevant Chapters of this EIAR document.

The relevant consultants liaised with each other and the project architects, engineers, and landscape architects where necessary to review the proposed scheme and incorporate suitable mitigation measures where necessary. As demonstrated throughout this EIAR, most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the design, construction or operation of the proposed development.

16.2 INTERACTIONS

Section 3.7.2 of the EPA Guidelines 2022 states that the interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. The EPA Guidelines further note that:

“It is general practice to include a matrix to show where interactions between effects on different factors have been addressed. This is usually done using the actual headings used in the EIAR (which may differ from the factors contained in the Directive (ref section 3.3.6). This is typically accompanied by text describing the interactions.”

Table 16.1: Matrix of Summary of interactions between the environmental factors

Interaction	Population & Human Health	Biodiversity	Land and Soils	Water	Air Quality/Cli mate	Noise/Vibra tion	Landscape and Visual	MA-Traffic	MA-Waste/Utiliti es	Cultural Heritage	Risk Mgmt
Population & Human Health		x	x	x	✓	✓	✓	x	✓	x	✓
Biodiversity	x		✓	✓	✓	x	x	✓	✓	x	x
Land and Soils	x	✓		✓	✓	✓	x	✓	✓	✓	x
Water	✓	✓	✓		x	x	x	x	✓	x	x
Air Quality/Cli mate	✓	✓	✓	✓		x	x	✓	x	x	x
Noise/Vibr ation	✓	✓	x	x	x		x	✓	x	x	x
Landscap e and Visual	✓	✓	✓	x	✓	✓		x	x	✓	x
MA-Traffic	✓	✓	✓	✓	✓	✓	✓		x	x	✓
MA-Waste/Utiliti es	✓	✓	✓	✓	✓	✓	x	✓		x	x
Cultural Heritage	x	x	x	x	x	x	x	x	x		x
Risk Mgmt	✓	x	✓	✓	✓	✓	x	✓	x	x	

✓ Interaction x No Interaction

The following provides the interactions anticipated from the proposed development:

16.2.1 CHAPTER 3 POPULATION AND HUMAN HEALTH

The potential significant impacts on population and human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.2.1.1 Population and Human Health (Ch 3) - Air Quality/Climate (Ch 7)

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. However, dust control measures, as set out in Chapter 7 includes a range of measures such as wheel washes and covering of fine materials will minimise the impact on air quality.

The effect of construction on air quality will not be significant following the implementation of the proposed mitigation measures. It is proposed to adhere to good working practices and dust mitigation measures to ensure that the levels of dust generated will be minimal and are unlikely to cause an environmental nuisance. There will be no significant impact from dust once the development is completed. Overall, it is envisaged that the proposed development will not have a significant impact on air quality. This is dealt with in Chapter 7.

16.2.1.2 Population and Human Health (Ch 3) - Noise/Vibration (Ch 8)

The greatest potential for noise and vibration impact arising from the proposed development will be in the construction phase. However, following the implementation of the proposed mitigation measures in relation to noise, the impact associated with the construction phase of the proposed development is predicted to be moderate, transient and temporary. No significant impacts on the local noise and vibration climate are predicted during the operational phase of the proposed development. This is dealt with in Chapter 8.

16.2.2 CHAPTER 4 BIODIVERSITY (CH 4)

The biodiversity elements of this EIAR have involved consultation with a wide section of the Project Team particularly in relation to the Construction Management, design, drainage, lighting and landscape elements of the proposed Project. There are numerous inter-related environmental topics described in detail throughout this EIAR document which are of relevance to the biodiversity chapter. The biodiversity chapter of the EIAR involves interactions with the Land, Soils, Geology & Hydrogeology; Water, Hydrology, Hydrogeology; Air Quality; Noise and Vibration; Material Assets – Traffic and Transportation; Material Assets - Waste. There is potential for interaction between the biodiversity and other chapters outlined in the EIAR, during construction and operation. The mitigation measures that will be put in place for the proposed development will ensure that the impact on biodiversity would be negligible following the implementation of mitigation measures.

16.2.2.1 Biodiversity (Ch 4) – Land and Soils (Ch 5)

The biodiversity elements of this report have involved consultation with a wide section of the Project Team particularly in relation to the Construction Management, design, drainage and landscape elements of the proposed development. There are numerous inter-related environmental topics described in detail throughout this report document which are of relevance to the biodiversity chapter. The biodiversity chapter of the report involves interactions with the Land, Soils and Ground Water, Hydrology (Surface Water and Waste Water), Air and Climate, Noise and Vibration, Traffic and Transportation, Material Assets-Waste and Material Assets-Services. It is considered that there is the potential for slight, temporary negative impacts on biodiversity due to dust (air), noise, emissions to water and construction traffic associated with

the Construction Phase of the proposed Project. These impacts are addressed in the relevant chapters of this EIAR.

16.2.3 LAND AND SOILS (CH 5)

16.2.3.1 Biodiversity

The proposed development may have temporary negative impacts on biodiversity at site level during construction due to excavation and removal of soil with resultant impact on local biodiversity. It will not impose any significant impact on European Designated sites due to the treatment integrated in the surface water (stormwater) and foul (wastewater) drainage strategy and associated mitigation measures (as previously outlined in section 6.6 of Chapter 6- Hydrology) coupled with the large distance involved in the pathway and significant dilution factor downstream in the catchment and the Northwest Irish Sea.

16.2.3.2 Hydrology

As mentioned above, there is a close inter-relationship between soils, geology, hydrogeology and Chapter 6 - Hydrology. During construction of the proposed development, there will be soil excavation that could impact surface water quality if not adequately mitigated.

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and Hydrology during the operational phase.

Therefore, all mitigation measures discussed are considered applicable to both components. Adherence to the mitigation measures presented above and in Chapter 6 – Hydrology will ensure the effect is **negative, imperceptible** and **short-term**.

16.2.3.3 Air Quality

During construction of the proposed development, there will be a proportion of dust created during excavation (enabling works) and construction activities that could impact air quality if not adequately mitigated.

16.2.3.4 Cultural Heritage, Archaeology, & Architectural Heritage

Excavation could result in the discovery / finding or unearthing of shallow subsurface archaeology. Prior to any subsurface excavations, the site will be assessed by an archaeologist and appropriate mitigation measures agreed accordingly.

16.2.3.5 Waste

Waste: Excavation could result in encountering contaminated soil. This will undergo environmental testing and be disposed of at a suitable licenced waste facility as required.

16.2.3.6 Traffic and Transportation

Local Traffic and transportation will be implemented by the additional vehicle movements generated by the volume of excavated soil that will have to be transported off site, resulting in an increase of heavy good vehicles (HGVs) during construction. The increase in vehicle movements as a result of excavated soil removal during the construction phase will be temporary in duration. Traffic-related impacts during the construction and operational phases are addressed in Traffic & Transportation chapter of this EIAR.

16.2.4 CHAPTER 6 WATER, SURFACE WATER / GROUNDWATER

16.2.4.1 Biodiversity

The proposed development may have temporary negative impacts on biodiversity at site level during construction with resultant impact on local biodiversity. It will not impose any significant impact on European Designated sites due to the treatment integrated in the surface water (stormwater) and foul (wastewater) drainage strategy and associated mitigation measures (as previously outlined in section 6.6 of Chapter 6- Hydrology) coupled with the large distance involved in the pathway and significant dilution factor downstream in the catchment and the Northwest Irish Sea. Therefore, there is no potential for impacts on water quality within European Designated sites.

16.2.4.2 Land, Soil, Geology, and Hydrogeology

As mentioned above, there is a close inter-relationship between land, soils, geology, hydrogeology (Chapter 5) and Hydrology. During construction of the proposed development, there will be soil excavation that could impact surface water quality if not adequately mitigated. There will be a reduced recharge to the underlying aquifer due to hard cover and installation of a drainage system.

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and Hydrology during the operational phase.

16.2.4.3 Climate and Flood Risk

The proposed development will not have negative impact on flood risk as a result of climate change. The proposed development is located within Flood Zone C. The proposed drainage plan incorporates adequate attenuation taking consideration of a climate safety factor.

16.2.4.4 Air Quality

During construction of the proposed development, there will be a proportion of dust created during construction enabling works and construction activities that could impact air quality if not adequately mitigated.

16.2.4.5 Waste

Excavation could result in encountering contaminated soil which has the potential to runoff to surface waterbodies (i.e. onsite field drainage ditches) via overland flow if not adequately mitigated. This will undergo environmental testing and be disposed of at a suitable licenced waste facility as required.

16.2.5 CHAPTER 7 AIR QUALITY

16.2.5.1 Air Quality and Population & Human Health

16.2.5.1.1 Construction Phase

An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a low risk of dust-related human health impacts during the construction phase of the proposed development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is **direct, short-term, negative, localised** and **not significant** with respect to Population and Human Health during the construction phase.

16.2.5.1.2 Operational Phase

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the proposed development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Impacts will be **long-term, localised, direct, negative** and **not significant**.

16.2.5.2 Air Quality and Climate

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

16.2.5.3 Air Quality and Land & Soils

16.2.5.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land & Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

16.2.5.3.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Land & Soils during the operational phase.

16.2.5.4 Air Quality and Biodiversity

16.2.5.4.1 Construction Phase

Dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. There are no designated ecological sites within 250 m of the proposed development site area. Significant dust impacts are not predicted beyond this distance. Dust mitigation measures will be implemented on site as set out in Section 7.8. With the implementation of these mitigation measures dust emissions will be minimised and impacts will be **direct, short-term, negative, localised** and **not significant** with respect to biodiversity.

16.2.5.4.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Biodiversity during the operational phase.

16.2.5.5 Air Quality and Material Assets – Traffic & Transport

16.2.5.5.1 Construction Phase

Interactions between Air Quality and Traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality

are linked but there is no potential for significant impacts from traffic on air quality. The effects are considered to be **direct, short-term, neutral, localised** and **not significant** during the construction phase.

16.2.5.5.2 Operational Phase

The impact of the interactions between Traffic and Air Quality are considered to be **long-term, direct, negative** and **not significant** during the operational phase.

16.2.6 CHAPTER 8 CLIMATE

16.2.6.1 Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed, and the surface water drainage network has been designed to cater for increased rainfall in future years due to climate change. The effect of the interactions between climate and land, soils, geology and hydrology are **direct, short-term, negative and imperceptible** during the construction phase and **direct, long-term, negative and imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

16.2.6.2 Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is **no impact** on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

16.2.6.3 Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO₂, a greenhouse gas. The effects of the proposed development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are **direct, short-term, negative and not significant** during the construction phase and **direct, long-term, negative and not significant** during the operational phase, which is overall **not significant** in EIA terms.

16.2.6.4 Microclimate - Wind

There is the potential for the proposed development to be impacted by the local wind microclimate. More detail can be found in Ch. 18 Microclimate – Wind. This chapter identified no significant effects on the proposed development due to the wind microclimate. Therefore, in this assessment the effects of the interactions between microclimate - wind and climate are considered **direct, short-term, negative and imperceptible** during the construction phase and **direct, long-term, negative and imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

16.2.6.5 Waste

Waste management measures (detailed in Ch. 20 Material Assets – Waste) will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered **direct, short-term, negative and not significant** during the construction phase and **direct, long-term, negative and not significant** during the operational phase, which is overall **not significant** in EIA terms.

16.2.7 CHAPTER 9 NOISE/VIBRATION

For Construction and operational phases chapter 11 traffic and transportation, has been referenced with respect to expected number of vehicle movements in each phase. This data has been used to calculate changes in noise level associated with construction traffic and new operational traffic as a result of the development. This was then used to determine the significance traffic associated with the proposed development, during the construction and operational phases, would have on the noise levels in the area.

16.2.8 LANDSCAPE AND VISUAL (CH 9)

The landscape and visual impact of the proposed development can be related to cultural heritage, human beings, material assets and ecology.

Landscape works are proposed to enhance accessibility to and the setting of the Holy Well (NIAH DU001-004) to the north of the site with the objective of protecting the existing environment surrounding the well and preserve the well itself. The majority of vegetation will be retained and protected though brier and gorse will be managed. All other designated monuments or heritage sites are distant enough from the Application Site to not be subject to any significant changes to their setting or amenity.

The design process took into account visual impact to local residential properties in the adjacent Chieftains Way estate and off Flemington Lane where changes to the landscape setting could affect the setting and amenity. Landscape works to the boundary areas and integration of open spaces were designed into the scheme to minimise potential visual effects and assist in integration of the proposed development.

There are no designated natural environment areas or landscape close enough to be affected by activity on the Application Site. The proposed landscape works were reviewed by the project ecologist and plant species include significant indigenous species and other ecology measures are included which will have a positive effect as it matures on local ecology and diversity. This included coordination between landscape architect, arborist and ecologist in relation to assessing condition of hedgerows and how these could be retained, augmented and improved as part of this development to ensure their longer term contribution to this landscape.

16.2.9 MATERIAL ASSETS – TRAFFIC & POPULATION AND HUMAN HEALTH

The analysis contained within this chapter interacts with human health, biodiversity, water, noise and vibration, visual, contained within this EIAR. This is primarily due to the potential for an increase in traffic movements on the surrounding road network during the construction and operational phases due to the proposed development.

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased traffic or access restrictions (pedestrian and vehicular.) Additionally, employment and economic activity will be generated during the construction stage of the project. Chapter 3 further describes the effect of the proposed scheme on Population and Human Health.

16.2.10 MATERIAL ASSETS – TRAFFIC & LAND AND SOILS

The volumes of surplus soils generated by the scheme and the earthworks import requirement will affect construction stage traffic generation. Remedial measures are proposed for the Construction and Operational phases. During Construction, The CEMP will ensure that construction traffic impacts are minimised through the control of site access / egress routes and site locations and any temporary lane

closure requirements. During Operation, a low level of car parking provision will be reflected in less use of land. Chapter 5 further describes the effect of the proposed scheme on Land and Soils.

16.2.11 MATERIAL ASSETS – TRAFFIC & WATER

Construction and operational stage traffic have the potential to impact water quality via hydrocarbon spills and leaks and via increased sediment/particle loading on trafficked surfaces. Chapter 6 further describes the effect of the proposed scheme on Water.

16.2.12 MATERIAL ASSETS – TRAFFIC & NOISE AND VIBRATION

The noise emission sources from the proposed development during the construction and operational stages are assessed in this report. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Noise emissions have the potential to negatively impact on human beings, population and human health. Chapter 8 further describes the effect of the proposed scheme on Noise and Vibration.

16.2.13 MATERIAL ASSETS – TRAFFIC & AIR AND CLIMATE

The proposed development will result in an increase in traffic levels causing a change in ambient air pollution levels in certain areas along the scheme. Overall, the impact of the interaction between air quality and traffic is considered negative, slight and long-term.

Additionally, during the construction phase an increase in the emissions of greenhouse gasses will be present. However, the impact of the interaction between climate change and traffic is considered temporary, slight and not significant. Chapter 7 further describes the effect of the proposed scheme on Air and Climate.

16.2.14 MATERIAL ASSETS – TRAFFIC & LANDSCAPE AND VISUAL IMPACT

During the construction phase, the presence of a substantial construction site (including construction traffic entering and exiting the site) negatively affects visual amenity in adjacent areas. The impacts due to the interactions with landscape and visual are anticipated to be Negative, Not Significant, over the Short Term for the Construction Phase. The impacts due to the interactions with landscape and visual are anticipated to be Positive, Significant over the Long Term for the Operational Phase. Chapter 9 further describes the effect of the proposed scheme on Landscape and Visual Impact.

16.2.15 MATERIAL ASSETS – WASTE MANAGEMENT (CH 11) & WATER, HYDROGEOLOGY & HYDROLOGY (CH 6)

Should waste be incorrectly handled or stored at the development site during construction works, it has the potential to cause an adverse impact upon water quality in the area through leaching of materials to groundwater or surface water. However, as mentioned above, waste will be segregated and stored in suitably contained waste receptacles at the site compound, considerably reducing the potential risk of pollution to water. It is not considered that there would be any significant risk to water quality as a result of waste management during the operational phase, given that waste will be collected by private, licensed waste contractors and recovered, recycled or disposed of at appropriately licenced waste facilities, which would have environmental controls in place as standard. This is dealt with in Chapter 11.

16.2.15.1 Material Assets – Waste Management (Ch 11) & Population and Human Health (Ch 3)

Population and Human Health: The improper removal, handling and storage of hazardous waste could negatively impact on the health of construction workers. Potential impacts on population and human health are addressed in Chapter 3.

Should waste be incorrectly handled or stored at the development site, it has the potential to cause an adverse impact upon human beings through nuisance, including visual, odour and pests, and pollution to soils and water.

16.2.15.2 Material Assets – Waste Management (Ch 11) & Biodiversity (Ch 4)

Biodiversity: The improper handling and storage of waste during the construction and operational phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 4 (Biodiversity).

16.2.15.3 Material Assets – Waste Management (Ch 11) & Land and Soils (Ch 5)

Land, Soils, Geology and Hydrogeology: Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the Site. Potential impacts on land and soils are addressed in Chapter 5.

16.2.16 MATERIAL ASSETS – UTILITIES (CHAPTER 12) & LAND AND SOILS (CH 5)

The potential significant impacts on Material Assets – Utilities arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant temporary or permanent residual negative impacts will occur. There are interactions between utilities and lands and soils, with the construction of drainage and utilities impacting the quantity of soil and subsoil as these materials will be removed to facilitate construction. The likely impact will be permanent slight, permanent, and negative.

The design team has been in regular contact with each other throughout the design process to minimise environmental impacts and to ensure a sustainable and integrated approach to the proposed development design. During the construction phase, the following aspects would interact with built services and, in the absence of mitigation, may give rise to likely significant effects:

Chapter 3: Population & Human Health - Connections to existing services may require a temporary interruption to existing services in the local area.

Chapter 6: Water & Hydrology - The construction of the proposed services (water supply and drainage) may affect the local hydrological and hydrogeological environment as there is a risk of suspended solids runoff.

During the operational phase, the potential interactions are:

Chapter 6: Water & Hydrology - There will be an increased demand for potable water supply.

The potential significant impacts on built services arising from these interactions have been considered within the relevant discipline, and mitigation measures have been outlined where required. With mitigation measures implemented, no significant permanent residual negative impacts will occur.

16.2.17 CULTURAL HERITAGE (CHAPTER 13)

No interactions with other disciplines have been identified during the compilation of this assessment.

16.2.18 RISK MANAGEMENT (CHAPTER 15)

There are interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and

codes, the interactions between these areas have been sufficiently considered in relation to risk management.

16.2.19 INTERACTIONS & CUMULATIVE IMPACTS

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other relevant existing and/or approved projects in the area in respect of the relevant projects identified in Chapter 17.

The potential cumulative impacts primarily relate to traffic, dust, noise, and other nuisances from the construction of the development, with other planned or existing projects, and each of the EIAR chapters has regard to these in the assessment and mitigation measures proposed.

The potential cumulative significant effects through interactions have been considered and there is no significant potential for cumulative significant effects to arise from multiple non-significant effects. In respect of the project.

17.0 CUMULATIVE AND RELATED DEVELOPMENT

17.1 INTRODUCTION

This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates. Rory Kunz has a Masters in Environmental Resource Management and a Diploma in EIA Management (both from UCD) as well as a Masters in Town and Country Planning. In addition, Rory is a corporate member of the of the Irish Planning Institute and has over 23 years of experience of Environmental Impact Assessment and urban development. Rory has acted as lead planning consultant on a range of high-quality complex planning applications across the country over an extended period. Rory has wide-ranging experience in the management and review of Environmental Impact Assessment Reports (EIAR) for major residential and mixed-use development and redevelopment projects.

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential for cumulative and combined effects to occur as a result of the Proposed Development. Cumulative and combined effects are defined as follows:

- Cumulative effects are those that accrue over time and space from a number of development activities – the impact of the Proposed Development is considered in conjunction with the potential impacts from other projects or activities which are both reasonably foreseeable in terms of delivery (i.e. have planning consent or relevant applications which have been submitted and are in the planning system) and are located within a realistic geographical scope where environmental impacts could act together with the Proposed Development to create a more significant overall effect; And
- Combined effects are those resulting from a single development (the Proposed Development) on any one receptor that may collectively cause a greater effect (such as the combined effects of noise and visual disturbance impacts during construction on birds).

17.2 METHODOLOGY

The following documents were reviewed in respect of methodology:

'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (Government of Ireland, 2018) provides high level guidance on the assessment of cumulative effects.

EPA's *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'* (EPA, 2022) provides a checklist for the assessment of cumulative effects, it should be considered whether the EIAR has:

- *'described cumulative effects?*
- *considered cumulative effects due to cumulation of effects with those of other projects that are existing or are approved but not yet built or operational?'*

The assessment presented in this EIAR Chapter draws on the assessment of impacts provided in Chapters 3 to 14 of this EIAR, and information in the public domain relating to other known developments within the Study Area.

The cumulative impact assessment does not consider other developments that are already constructed and operating, as such existing developments are already accounted for in the baseline conditions established for the main assessments within Chapters 7 to 15 of this EIAR. The requirements of the EIA

Directive and Guidelines to consider existing projects is therefore dealt with in those chapters. This Chapter considers only proposed developments, being the “**permitted or planned projects**” noted in paragraph 3.5.2 of the EPA’s Guidelines (EPA, 2022).

17.2.1 LEGISLATION AND PLANNING POLICY CONTEXT

This EIAR is provided in accordance with the EU EIA Directive 2011/92/EU and EIA Directive 2014/52/EU and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, in order to inform the consideration of the Application and provide the planning authority with the environmental information that must be taken into account when determining the Application.

The requirement for cumulative and combined impact assessments is stated in the relevant European Directive and domestic legislation, as detailed below:

- European Directive 2014/52/EU on the assessments of effects of certain public and private projects on the environment requires an assessment of: *“the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project”*.
- S.I. No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 – *“the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources”*, and (ii) the description of the likely significant effects on the factors specified in paragraph (b)(i)(I) to (V) of the definition of ‘environmental impact assessment’ in section 171A of the Act should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long term, permanent and temporary, positive and negative effects of the proposed development, taking into account the environmental protection objectives established at European Union level or by a Member State of the European Union which are relevant to the proposed development..

17.3 ASSESSMENT METHODOLOGY

There is no standard prescriptive method for assessing cumulative and combined effects and, in relation to cumulative effects, the extent to which the effects of other developments can be assessed quantitatively depends on the level of information available about the other developments. Such effects are, therefore, assessed by professional judgment, although matrices and modelling are used where appropriate and where enough information regarding the other developments exists.

This assessment aims to identify the likelihood for cumulative and combined effects expected to occur during the construction and operation (including maintenance) of the Proposed Development, and where possible, identify the possibility for significant effects.

Construction effects are assessed assuming construction of the Proposed Development starts in 2026/2027. This assessment is on a worst-case basis because it is possible that other developments are permitted or approved between the date of the preparation of the EIAR and the date when construction commences.

The cumulative operational assessment considers the total effects of the Proposed Development and the other identified developments operating concurrently.

Cumulative effects during decommissioning of the Proposed Development are not considered as there is no defined time at which decommissioning will take place and therefore no certainty of temporal overlap with other identified developments and their decommissioning.

17.3.1 CUMULATIVE EFFECTS

A search of committed developments (i.e., one that has received full planning permission) in the locality of the Proposed Development was undertaken using the An Bord Pleanála Online Planning search tool, the web map portal providing spatial information relevant to the planning process in Ireland (myplan.ie) and the FCC Online Planning Register.

A desktop planning history search for the last five years and within 2km of the Proposed Development was undertaken using these resources to assess historical and current land use. Planning applications older than five years have not been assessed as they have been deemed to either have expired or have been constructed (due to the standard five-year life of planning consents). In addition, the EIA portal of the Department (<https://www.housing.gov.ie/planning/environmental-assessment/environmentalimpact-assessment-eia/eia-portal>) maintained by the Department of Housing, Planning and Local Government – for applications for development consent accompanied by an EIAR.

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other permitted projects in the immediate area. The potential cumulative impacts primarily relate to traffic, dust, noise, and other nuisances from the construction of the development, with other planned or existing projects has regard to these in the assessment and mitigation measures proposes.

As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other planned developments will be minimal.

Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments, where relevant. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

Should any other developments be under construction or planned in the vicinity of the site, potential cumulative impacts are not anticipated once similar mitigation measures are implemented.

Relevant developments have been identified with regard to their size and scale, their use mix and composition, and their proximity to the proposed development, within the settlement of Balbriggan, in particular to identify any substantial / strategic residential development or larger scale commercial development. Applications of a minor nature were discounted from the planning history search, for example applications for under 5 no. dwellings, or applications relating to minor extensions, works to existing dwellings, and change of use applications. The planning history search focussed on relevant permitted developments in the last 5 years, with a search also undertaken for permitted longer term permissions (i.e. with a 10-year permission).

17.4 RELEVANT PROJECTS

Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other planned projects in the immediate area. The potential cumulative impacts primarily relate to traffic, dust, noise and other nuisances from the construction of the development, with other planned or existing projects, and each of the following EIAR chapters has regard to these in the assessment and mitigation measures proposes.

Projects considered in the assessment comprise:

Table 17.1: Cumulative Projects

Ref:	Location	Description
F23A/0634	Stephenstown Business Park, Stephenstown, Balbriggan, County Dublin, K32X996	Permission for development at the existing waste recovery facility located at Stephenstown Business Park, Stephenstown, Balbriggan, County Dublin, K32X996. The development will consist of: (i) An increase in the total annual waste intake to 95,500 tonnes per annum for recovery; (ii) Revision of operating hours to include public holidays; (iii) Ancillary works comprising a covered bicycle store (6 no. spaces) and reconfiguration of the existing car parking area (7 no. car spaces and 1 no. motorcycle space) to include an electric vehicle charging point and associated underground cable ducting. The development will comprise an activity requiring a review of the existing Industrial Emissions licence (EPA reference no. P1014-01).
F22A/0480	Stephenstown Industrial Estate, Balbriggan, Dublin	The development will principally comprise the construction of a two-storey warehouse unit with ancillary office and staff facilities and associated development as well as a single storey garage. The warehouse unit will have a maximum height of 14.78 metres with a gross floor area of 1,996 sq m including warehouse area (1,670 sq m), ancillary staff facilities (184 sq m) and ancillary office area (142 sq m). The garage will have a maximum height of 14.358 metres and a gross floor area of 500sq m. Final Grant 5th April 2023.
F22A/0033	Lands at Harvest Lodge, Folkstown Lane (Folkstown Little Td) and lands at Folkstown Great Td, Naul Road, Balbriggan, Co Dublin.	The development will consist of a distillery (total floor area of floor area 5659m2) which includes provision of an ancillary visitor centre, storage shed along with associated external plant. Final Grant 10th February 2023
F23A/0075	Bremore Pastures, Balbriggan, Co. Dublin	Permission for the construction of 4no. two storey terraced 3 bedroom dwellings, rear garden areas, boundary walls, connections to existing services and all associated site development works at Bremore Pastures, Balbriggan, County Dublin.
LRD0048/S3E (ABP Ref: 321437-24) – Folkstown LRD	within the townlands of 'Clonard or Folkstown Great', and 'Clogheder',	197 no. dwellings, and ancillary infrastructure to facilitate Phase 4 lands at Ladywell in Balbriggan.

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Ref:	Location	Description
	Balbriggan, Co. Dublin c.7.15 hectares	
F22A/0670	(on lands of c. 6.29 ha.) relating to: 'Phase 3' to be known as 'Ladywell', within the townlands of, 'Clonard or Folkstown Great', 'Cloghader' & 'Flemingtown Balbriggan, Co. Dublin	The development will consist of Phase 3C as well as roads, services and public open space relating to the overall Phase 3 Ladywell lands as follows: A) 75 no. dwellings comprising 68 no. houses consisting of 22 no. 2 bedroom dwellings (House Types E1, E2, E4, E6, E7, E8, E9, G1, G2, G3, G4, G5), 41 no. 3 bedroom dwellings (House Types D1, D2, F1, F2, F3, F4, F4A, F5, F5A, N1, N2, N3], 2 no. 4 bedroom detached dwellings (house type M1] - all 2-storey), & 3 no. 5 bedroom detached dwellings [House Type K1 - 2.5 storeys - 3 floors), (in a mixture of semi-detached, terraced, end of terrace and detached units); all with associated private open space; B) 7 no. 1 bedroom apartment units consisting of 3 no. 1 bedroom triplex units (T1, T2, T3] in a 3-storey building, 4 no. 1 bedroom Maisonettes [Apartment Types P1 & P2] in 2 no. 2-storey buildings, (all with private open space); provision of single storey cycle parking; bin stores; and ESB substations, solar panels on roofs; as well as 238 no. surface car parking spaces; C) Public Open Space of c. 1.34 hectares (Phase 3C - c. 0.38 ha), (with additional 0.48 hectares of incidental open space) as well as communal (c. 0.06 ha) and private open space; all associated landscaping and drainage works (including attenuation] with public lighting, planting and boundary treatments, including regrading/reprofiling of site where required; D) Provision of Class 1 Public Open Space (c. 0.65 hectares), with play equipment (accessed from Hamlet Lane) located to the west of Bremore Pastures and Hastings Lawn, south of Flemington Lane, [proposal includes alterations to part of the Class 1 public park and associated works approved under Reg. Ref. F15A/0550]; E) Provision of roads and services infrastructure (surface water, foul and water supply) to facilitate the development of the remainder of Phase 3 lands (Phases 3A, 3B & 3D) including public lighting, SuDS drainage and services infrastructure, as well as vehicular and pedestrian connections to the 'Boulevard Road' and all associated landscaping and ancillary site development works; F) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;
F22A/0526	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or Folkstown	Development (on lands of c. 6.70 ha) relating to: 'Phase 3' to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Cloghader & Flemingtown, Balbriggan, Co Dublin. (Phase 3 lands bounded generally by undeveloped lands to the north, undeveloped lands to the south, Boulevard Road to the east, and undeveloped lands to the west (to the rear of

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Ref:	Location	Description
	Great, Clogheder & Flemington, Balbriggan, Co. Dublin	local road L1130). The proposal includes a separate site of Class 1 Public open Space of c. 0.65 hectares in the adjoining townland of Flemington to the north (accessed from Hamlet Lane, Bremore Pastures Drive, Balbriggan). The development will consist of Phase 3B as well as roads, services and public space relating to the overall Phase 3 Ladywell lands as follows: A) 95 no. dwellings comprising 79 no. 2-storey houses consisting of 20 no 2 bedroom dwellings (House Types E1, E1A, E2, E4, E5, E6), 59 no. 3 bedroom dwellings (House Types D1, D1A, D2, D2A, F1, F1A, F2, F3, F4, F5, F6) all with associated private open space (in a mixture of semi-detached, terraced and detached units), 16 no. 1 bedroom Maisonettes (Apartment Types P1, P1A & P2, P2A), all with private open space; in 4 no. 2 storey building, single storey cycle parking; bin stores; and ESB substations, solar panels on roofs; as well as 305 no. surface car parking spaces; B) Public Open Space of c. 1.34 hectares, (with additional 0.48 hectares of incidental open space along riparian corridor) as well as communal and private open space; all associated landscaping and drainage works (including attenuation) with public lighting, planting and boundary treatments, including regrading/re-profiling of site where required; C) Provision of Class 1 Public Open Space (c. 0.65 hectares), with play equipment (accessed from Hamlet Lane) located to the west of Bremore Pastures and Hastings Lawn, south of Flemington Lane, (proposal includes alterations to part of the Class 1 public park and associated works approved under Reg. Ref. F15A/0550); D) Provision of roads and services infrastructure (surface water, foul and water supply) to facilitate the development of the remainder of Phase 3 lands (Phases 3A, 3C & 3D) including public lighting, SuDS drainage and services infrastructure, as well as vehicular and pedestrian connections to the "Boulevard Road" and all associated landscaping and ancillary site development works; E) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;
F21A/0055	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Clogheder & Flemington, Balbriggan, Co. Dublin	The development will consist of Phase 3A as well as roads, services and public space relating to the overall Phase 3 Ladywell Masterplan lands as follows: A) 99 no. dwellings comprising 73 no. 2-storey houses consisting of 24 no. 2 bedroom dwellings [House Types E1, E2, E3, E4), 44 no. 3 bedroom dwellings (House Types B1, B2,B3, D1, D3, F1, F2, F3, F4, F5] & 5 no. 4 bedroom dwellings [House Types M1 & M2]), all with private open space; 16 no. duplex apartments (8 no. 2 bedroom [Types X1, X3] and 8 no. 3 bedroom units [Types X2, X4) in a 3 storey duplex building (including terraces at first floor level, single storey refuse storage building and cycle parking); 6 no. 1 bedroom 'triplex' apartments [Types T1, T2, T3] with balconies at first and second storey levels in 2 no. 3 storey buildings along with a single storey bicycle store & 4 no. 1 bedroom 'maisonette' apartments in 2 no 2 storey buildings (Types P1 & P2]) & bin stores as well as 172

Ref:	Location	Description
		no. car parking spaces; B) Public Open Space of c. 1 hectare, (with additional 0.27 hectares of open space along riparian corridor) as well as communal and private open space; all associated landscaping and drainage works (including attenuation) with public lighting, planting and boundary treatments, including regrading/re-profiling of site (and ditches) where required; C) Provision of Class 1 Public Open Space (c. 0.65 hectares), with play equipment (accessed from Hamlet Lane) located to the west of Bremore Pastures and Hastings Lawn, south of Flemington Lane, (proposal includes alterations to part of the Class 1 public park and associated works approved under Reg. Ref. F15A/0550); D) Provision of roads and services infrastructure (surface water, foul and water supply) to facilitate the future development of Phase 3 lands (Phases 3B-3D) including public lighting, Suds drainage and services infrastructure, as well as vehicular and pedestrian connections to the 'Boulevard Road' and all associated landscaping and ancillary site development works; E) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;
ABP 313210-22 SHD		On the 23rd of March 2023, ACP granted a 10-year permission to the Land Development Agency for development comprising inter alia the construction of 817 no. residential units (377 no. houses, 440 no. apartments), childcare facilities and associated site works, subject to 30 no. standard conditions.
FCC Planning Reg. Ref. F21A/0576 & ABP Ref: 312529-22	Castlelands, Balbriggan	An application for the Advance Infrastructure was submitted to FCC in October 2021 under FCC Reg. Ref. F21A/0576. A decision to grant permission was made by FCC 14th December 2021 and confirmed by ACP on the 8th of November 2022.
F24A.1069E ACP-322977-25	Stephenstown Industrial Estate	Demolition of existing 2 no. storey building on site (c. 1,070 sqm), the construction of a 2 no. storey discount retail store with off-licence use (c. 2,448 sqm gross floor area) c. 1,356 sqm net retail floor area.
An Coimisiún Pleanála - Case reference: PL06F.304673 Planning Authority Case Reference: F19A/0131	Balbriggan Community College, Pine Ridge, Chapel St., Balbriggan, Co. Dublin.	Demolition of existing school and construction of new 3 storey Post Primary School & single storey Special Education Needs Unit. Granted 20/09/2019
An Coimisiún Pleanála - Case reference: OA29N.319866	Located off the coast of Counties Dublin, Meath and Louth	Proposed development known as North Irish Sea Array ("NISA") Offshore Wind Farm.
An Coimisiún Pleanála - Case	Dublin City Centre and Drogheda,	DART + Coastal North Railway Order 2024 - Northern Line between Dublin City Centre and Drogheda

Ref:	Location	Description
reference: NA29N.320164	located in counties Dublin, Meath and Louth	including the Howth Branch. ACP Decision-Make Railway Order with conditions. Date signed 19/08/2025.

17.5 ASSESSMENT

17.5.1 POPULATION AND HUMAN HEALTH

The cumulative impact of the proposed development, along with other permitted and existing developments in the vicinity, will be a further increase in the population of the wider area into the future. This will have a moderate positive long-term impact on the population in the immediate area of Ladywell/Folkstown and a slight positive long-term impact in the wider area of Balbriggan.

Chapter 7 (Air Quality) states that the operational phases of the subject development and other permitted residential developments in the local area will not generate cumulative air emissions that will have an adverse impact on local ambient air quality. Measured baseline air quality and National published air quality data confirm that the existing air quality is good and that the operational phases of the subject development and other local proposed developments will have a long-term imperceptible impact on existing air quality.

Based on the mix and potential occupancy the permitted adjoining Phase 4 LRD development at Ladywell/Folkstown could potentially result in a population of c. 565 when fully built and occupied (based on 1.5 persons per 1-bedroom unit, 2.5 persons per 2-bedroom unit and 3.5 persons per 3-bedroom unit +). This proposed phase could result in some 2,194 persons.

In terms of employment the combined additional working population could be in the region of some 75 persons across the phases.

Chapter 9 (Noise and Vibration) states that the cumulative noise and vibration impacts associated with the proposed development and future local developments will not result in an increased impact on the closest receptors to the proposed development site.

There is a possibility that multiple developments in the area could run concurrently or overlap in the construction phase and contribute to additional impacts in terms of traffic, dust and noise. However, the mitigation measures highlighted above and included in the individual chapters of this EIAR, along with the fact that any other significant construction project in the area would also likely require an EIAR and inclusion of mitigation measures to reduce the cumulative impacts to sensitive receptors in the area. The construction phase of the proposed development together with any relevant other planned or permitted developments would have a positive impact in terms of employment. Contractors for the proposed development would be required to operate in compliance with a project-specific CMP and FCTMP (See Appendix F Volume III of the EIAR), which will include mitigation measures outlined in this EIAR. It is considered that there would be no cumulative effects on human health. The mitigation contained in Chapter 17 of this EIAR and CEMP as well as the NIS by Altamar will be contained in the contractor's CEMP.

17.5.2 BIODIVERSITY

As part of the assessment of the impact of the proposed development, account has also been taken of cumulative projects, i.e. developments that are currently permitted or under construction within the surrounding area, but whose environmental impact are not yet fully realised within the existing environmental baseline. Following a review of projects located in proximity to the proposed development it was determined that no significant projects are proposed or currently under construction that could potentially cause in combination effects on designated conservation sites.

Given this, it is considered that cumulative impacts with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no significant effects on designated conservation sites will be seen as a result of the proposed development alone or in combination with other projects.

An AA screening/NIS was also carried out for this development. It concluded that 'No projects in the vicinity of the proposed development would be seen to have a significant in combination effect on Natura 2000 sites.'

No significant effects are likely from cumulative impacts.

17.5.3 LAND, SOILS AND GEOLOGY

All cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such, any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

17.5.3.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions in the area. This chapter has been prepared with reference to the list of other developments in the locality.

In relation to the potential cumulative impact on land soils and hydrogeology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- soil and groundwater contamination due to accidental hydrocarbon/cement leakage to ground.

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation (see Appendix D, Volume III of the EIAR). This together with the mitigation measures set out in Section 5.6 outlines the best practice construction techniques and methodologies which will be implemented during construction of the proposed development to minimise potential for contamination.

The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The works contractors for other planned or permitted developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022)).

The implementation of mitigation and monitoring measures detailed in Section 5.6; and 5.8 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and short-term**.

17.5.3.2 Operational Phase

In relation to the potential cumulative impact on hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off;
- Increased risk of minor accidental discharge of hydrocarbons from car parking areas and along roads is possible unless diverted to surface water system with petrol interceptor;
- There will be a small loss of greenfield area locally as part of the proposed Project.

The proposed development and the other permitted development listed in close proximity will result in an increase in hard standing which will result in localised reduced recharge to ground. The aquifer underlying the site is “Locally Important Aquifer (Lm) –Bedrock which is Generally Moderately Productive in local zones”. The implementation of SuDs measures on site will mitigate against and reduce the recharge rate to ground.

All nearby developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022)).

The implementation of mitigation measures detailed in Section 5.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geology, hydrogeological environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and long-term**.

17.5.4 HYDROLOGY, WATER

17.5.4.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions in the area. This chapter has been prepared with reference to the list of other developments in the locality.

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

Surface water contamination due to accidental hydrocarbon/cement leakage to ground and runoff / overland flow to surface waterbodies.

A Construction Environmental Management Plan (CEMP) (2025) is included with the application documentation (refer to Appendix D, Volume III of the EIAR). This together with the mitigation measures set out in Section 6.6 outlines the best practice construction techniques and methodologies which will be implemented during construction of the proposed development to minimise potential for contamination.

The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the Site will be trained in the implementation of the procedures.

The works contractors for other planned or permitted developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022)).

The implementation of mitigation and monitoring measures detailed in Section 6.6; and 6.8 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the construction phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and short-term**.

17.5.4.2 Operational Phase

In relation to the potential cumulative impact on hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the Site. Cumulatively this development and others in the area will result in localized reduced recharge to ground and increase in surface run-off;
- Increased risk of minor accidental discharge of hydrocarbons from car parking areas and along roads is possible unless diverted to surface water system with petrol interceptor;

Increase in wastewater loading and water supply requirement is an impact of all development. Each development will require approval from the Uisce Eireann (formerly IW, Irish Water) confirming available capacity in the water and wastewater infrastructure. The surface water and foul drainage infrastructure and water supply requirements for the proposed development have been designed to accommodate the proposed development and a confirmation of feasibility received.

All nearby developments will also be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 9 of 2010, S.I. 366 of 2016 and S.I. 287 of 2022).

The implementation of mitigation measures detailed above in Section 6.6 as well as the compliance of the above permitted development with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the operational phase of the proposed development. The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **neutral, imperceptible, and long-term**.

17.5.5 AIR QUALITY

17.5.5.1 Construction Phase

Cumulative construction dust impacts may occur if large-scale developments within 500 m of the site are under construction simultaneously.

The National Planning Application Database (Department of Housing, Local Government, and Heritage, 2025) was reviewed for planned and permitted projects within the last ten years in the vicinity of the site was undertaken to identify developments within 500 m of the overall proposed development boundary with the potential for cumulative construction phase impacts. Regard was had to the projects below and as outlined in chapter 17 of the EIAR relating to cumulative development.

The following developments were identified of sufficient scale to potentially generative cumulative dust impacts with the proposed development.

Table 17.2: Summary of Committed Developments with Potential for Cumulative Construction Dust Effects

Planning Reference No.	Description
F23A/0634	Development at the existing waste recovery facility located at Stephenstown Business Park.
F22A/0480	Development will principally comprise the construction of a two-storey warehouse unit with ancillary office and staff facilities and associated development as well as a single storey garage.
F22A/0033	The development will consist of a distillery (total floor area of floor area 5659m ²) which includes provision of an ancillary visitor centre, storage shed along with associated external plant.
F23A/0075	Construction of 4no. two storey terraced 3-bedroom dwellings, rear garden areas, boundary walls, connections to existing services and all associated site development works at Bremore Pastures, Balbriggan, County Dublin.
LRD0048/S3E	197 no. dwellings, and ancillary infrastructure to facilitate Phase 4 lands at Ladywell in Balbriggan.
F22A/0670	Development will consist of 75 no. dwellings comprising 68 no. houses consisting of 22 no. 2 bedroom dwellings, 41 no. 3 bedroom dwellings, 2 no. 4 bedroom detached dwellings, & 3 no. 5 bedroom detached dwellings.
F22A/0526	Development will consist of 95 no. dwellings comprising 79 no. 2-storey houses consisting of 20 no 2 bedroom, 59 no. 3 bedroom dwellings all with associated private open space (in a mixture of semi-detached, terraced and detached units), 16 no. 1 bedroom Maisonettes, all with private open space; in 4 no. 2 storey building.
F21A/0055	The development will consist of 99 no. dwellings comprising 73 no. 2-storey houses consisting of 24 no. 2 bedroom dwellings, 44 no. 3 bedroom dwellings & 5 no. 4 bedroom dwellings, all with private open space; 16 no. duplex apartments and 8 no. 3 bedroom units in a 3 storey duplex building; 6 no. 1 bedroom 'triplex' apartments.
ABP 313210-22 SHD	Construction of 817 no. residential units (377 no. houses, 440 no. apartments), childcare facilities and associated site works, subject to 30 no. standard conditions.
F24A.1069E	Demolition of existing 2 no. storey building on site (c. 1,070 sqm), the construction of a 2 no. storey discount retail store with off-licence use (c. 2,448 sqm gross floor area) c. 1,356 sqm net retail floor area.
F19A/0131	Demolition of existing school and construction of new 3 storey Post Primary School & single storey Special Education Needs Unit.

The principal potential cumulative effect related to fugitive dust emissions. The dust mitigation measures outlined in Section 7.8.1 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. Similar dust mitigation measures are required for other permitted developments as per their respective impact assessments and planning conditions.

With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development is **short-term, direct, negative** and **not significant**.

17.5.5.2 Operational Phase

There is the potential for cumulative and also indirect impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic

data provided for the Operational Phase air quality assessment included specific cumulative developments within the area (see Chapter 11 Material Assets (Transportation) for further details) as well as the Climate Chapter.

The cumulative operational phase impact is assessed within Section 7.7.2.1 and was found to have a neutral impact on air quality as per the TII significance criteria (**Table 7.3**). The cumulative Operational Phase impact is **long-term, localised, direct, negative** and **not significant**.

17.5.6 CLIMATE

With respect to the requirement for a cumulative assessment the ISEP (ISEP, 2022) and TII (TII, 2022a) guidance on which the assessment is based states that *“the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland’s ability to meet its national carbon reduction target. This assessment approach is considered inherently cumulative”*.

The traffic data used for the operational phase assessment included cumulative traffic from existing and permitted developments in the surrounding area. Therefore, this impact assessment is cumulative. A full list of developments considered for the cumulative impact during the construction and operational phase of the development can be found in chapter 17 of the EIAR. All relevant developments and their cumulative impacts have been considered for the construction and operational phases.

As per the above, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

17.5.7 NOISE AND VIBRATION

17.5.7.1 Construction Phase

The proximity of the construction works outlined above, indicates that at the nearest NSLs it is possible that cumulative impacts could occur at the nearest receptors should all sites progress construction simultaneously. Chapter 17 of the EIAR outlines the potential cumulative projects (table 17.1 refers). In this scenario elevated construction noise emissions due to cumulative noise are potentially likely to occur at receptor locations as well as a potential increase in the length of time that the receptor will be exposed to construction noise. However, this would only occur during peaks in construction noise over short periods. Hence, cumulative construction impacts will need to be considered and managed during the construction phase. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be **negative, moderate to significant** and **short-term**.

17.5.7.2 Operational Phase

During the operational phase any cumulative impacts will be due to an increase in road traffic noise. However, given the insignificant levels of noise increase as a result of the traffic associated with this proposed development, it is not expected that cumulative traffic noise will increase by any significant margin as a result of this proposed development.

17.5.8 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Cumulative landscape or visual effects are the combined effects that arise through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Collectively they give rise to an overall combined effect.

A significant cumulative effect will occur where the addition of the proposed development to other existing and developments results in a landscape or view that is defined by the presence of more than one major development and is characterised primarily by large scale development so that other patterns and components are no longer definitive.

The proposed development is a large-scale residential development that – as noted above – will in isolation result in significant changes to the Application Site but it is located in a designated for “RA – Residential Area” and therefore it and the adjacent lands are predicted to have land-uses of this nature and type. West Balbriggan is already defined by housing estates and associated infrastructural elements including busy roads. Further and on-going developments including Taylor’s Hill, Ladywell and Folkstown are adding to a collective sense of townscape expansion in west Balbriggan though this is in line with the Development Plan objectives. The changes from rural / urban edge and landscape to townscape has been substantial and this proposal will be part of this on-going change. The effects on the adjacent areas and Balbriggan generally deriving from this proposal have been assessed above.

Chapter 17 provides details of the cumulative assessment in respect of the proposed development including the list of relevant projects and the tables above provides an assessment.

The wider site forms part of a large RA ‘Residential Area’ zoned block of land contained by the Clonard Road, the future C Ring Road, the L1130 local road and Taylor Hill Boulevard. Planning permission has been granted for three residential developments within this block of land (Reg Refs F21A/0055, F22A/0670 and F22A/0670, known as Ladywell Phases 3A, 3B and 3C). In addition, there is an LRD permission located adjacent to the south LRD0048/S3E (ABP Ref: 321437-24) – Folkstown LRD 197 no. dwellings, and ancillary infrastructure to facilitate Phase 4 lands at Ladywell in Balbriggan in a mix of apartments, houses and commercial units as well as open space.

The proposed development would represent the sequential development of this area of residential zoned land on the western side of Balbriggan.

17.5.9 MATERIAL ASSETS – TRANSPORT AND TRANSPORTATION

To determine traffic impacts in Chapter 10 the traffic generated by the proposed development is combined with the baseline traffic generated by the traffic on the road network in the area. The potential traffic impacts from other developments were also considered in the assessment (e.g. sites adjacent).

17.5.10 MATERIAL ASSETS – WASTE

Due to the high number of waste contractors in the FCC area and the EMR, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all of the developments. As such the cumulative construction phase effect will be **short-term, not significant** and **neutral**.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the cumulative operational phase effect will be **short-term, not significant** and **neutral**.

17.5.10.1 Construction Phase

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise / mitigate any potential cumulative impacts associated with waste generation and waste management. As such, the cumulative effect in terms of waste will be **short-term, imperceptible** and **neutral**.

17.5.10.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions granted and remaining to be decided in the area. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely to improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible and neutral**.

17.5.11 MATERIAL ASSETS – UTILITIES

The cumulative effects of the development on material assets have been assessed taking into account other planned, existing and permitted developments in the surrounding area. Chapter 17 provides a list of projects in the vicinity of the project lands.

Other developments identified include:

Planning Reg. Ref. ABP-312048-21 (F21A/0055) – Phase 3A Ladywell

On the 13th of October 2023, An Bord Pleanála upheld the decision of Fingal County Council and granted permission for phase 3A as part of the overall phase 3 at Ladywell comprising 99 no. dwellings open space and services and road layout for phases 3A-3D.

Planning Reg. Ref. F22A/0526 – Phase 3B Ladywell

Under Planning Reg. Ref. F22A/0526 Fingal County Council granted permission for phase 3B as part of the overall phase 3 at Ladywell which comprises 95 no. dwellings open space and services and road layout for phases 3A-3D.

Planning Reg. Ref. F22A/0670 - Phase 3C Ladywell

On the 5th of July 2023, Fingal County Council granted permission for development on the Phase 3C lands comprising 75 units open space and services and road layout for phases 3A-3D.

Planning Reg. Ref. ABP-321437-24 (LRD0048/S3E) – Phase 4 Ladywell

On the 27th of March 2025, An Bord Pleanála upheld the decision of Fingal County Council and granted permission for phase 4 as part of the Ladywell Development comprising 197 no. dwellings open space and services and road layout.

Cumulatively with other surrounding permitted, planned and existing development, it is predicted that the proposed development will contribute to the improvement of the overall urban environment.

The cumulative effects of the development on the foul, surface water, watermain and waste management systems are anticipated to be short term, neutral, and imperceptible. No significant impacts are anticipated.

In the event of future development adjacent to the proposed development, there are no predicted cumulative impacts arising from the construction or operation phase related to the material assets – built services provided that the other developments implement appropriate mitigation measures.

17.5.12 CULTURAL HERITAGE

All proposed developments within the study area have been considered with regards to potential cumulative impacts on the archaeological, architectural and cultural heritage resource. As all archaeological remains within the proposed development area will be preserved in-situ or by record, no cumulative impacts have been identified.

17.5.13 RISK ASSESSMENT

The mitigation measures set out in the CEMP (Appendix D Volume III of the EIAR), the mitigation contained in the Altamar NIS, which will form part of the contractor's CEMP, will ensure that the works across the elements of the overall project will be mitigated to reduce the inconvenience to residents in the area.

The cumulative interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage. However, subject to implementation of mitigation measures, good working practices and codes, the interactions between these areas have been sufficiently considered in relation to risk management. The cumulative effects post mitigation are considered to be neutral, medium term, slight.

17.6 ASSESSMENT SUMMARY

The assessment of cumulative effects has considered a number of other developments with the Proposed Development and the likelihood of significant cumulative effects to arise from the other identified developments together with the Proposed Development.

Through the consideration of the information available (at the time of assessment), it is concluded that there is no likelihood of any significant residual cumulative effects with the three planning applications.

The assessment of combined effects has not identified any significant combined effects where the combination of effects would result in a different rating of effect to that already predicted in the individual technical assessments.

As such, with the necessary mitigation for each environmental aspect, it is anticipated that the potential cumulative impact of the proposed development in conjunction with the other permitted developments would not result, either directly or indirectly, in likely significant effects on the environment.

18.0 SUMMARY OF EIA MITIGATION AND MONITORING MEASURES

The central purpose of EIA is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR document has been prepared by John Spain Associates and sets out a summary of the range of methods described within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring. It is intended that this chapter of the EIAR document will provide a useful and convenient summary to the competent/consent authority of the range of mitigation and monitoring measures proposed. This chapter of the EIAR was prepared by Rory Kunz, BA (MOD), MScERM, MAT&CP, Dip EIA Mgmt., Executive Director with John Spain Associates.

EIA related conditions are normally imposed by the competent/consent authority as part of conditions of planning consent and form a key part of the impact anticipation and avoidance strategy. Conditions are principally used to ensure that undertakings to mitigate are secured by explicitly stating the location, quality, character, duration, and timing of the measures to be implemented. A secondary role of EIA related conditions is to ensure that resources e.g. bonds / insurances will be available and properly directed for mitigation, monitoring, or remedial action, in the event that the impacts exceed the predicted levels.

Monitoring of the effectiveness of mitigation measures put forward in the EIAR document, both by the competent authorities and the developer, is also an integral part of the process. Monitoring of environmental media and indicators arise either from undertakings or from conditions.

In the case of mitigation and monitoring measures it is important for all parties to be aware of the administrative, technical, legal, and financial burdens that can accompany the measures proposed. It is also important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which if exceeded cause a clearly defined set of actions to be implemented.

18.1 MITIGATION STRATEGIES

18.1.1 INTRODUCTION

There are three established strategies for impact mitigation - avoidance, reduction, and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

18.1.2 MITIGATION BY AVOIDANCE

Avoidance is generally the fastest, most cost effective, and most effective form of impact mitigation. Environmental effects and consideration of alternatives have been taken into account at the earliest stage in the project design processes. The consideration of alternatives with respect to the development of the subject lands has been described in Chapter 2.

18.1.3 MITIGATION BY REDUCTION

This is a common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the "*end of pipe*" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

18.1.4 REDUCING THE EFFECT

This strategy seeks to intercept emissions, effects and wastes before they enter the environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

18.1.5 REDUCING EXPOSURE TO THE IMPACT

This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is affected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

18.1.6 MITIGATION BY REMEDY

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects. Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

18.1.7 MITIGATION AND MONITORING MEASURES

The following provides a list, for ease of reference, of the mitigation and monitoring measures recommended in each chapter of the EIAR.

18.2 PROJECT DESCRIPTION & ALTERNATIVES EXAMINED

18.2.1 CONSTRUCTION MANAGEMENT STRATEGY

18.2.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

The Contractor's CEMP will implement the mitigation measures contained in this EIAR and the CEMP (included with the application in Appendix D Volume III of this EIAR) as well as the mitigation contained in the NIS. The CEMP presents the approach and application of environmental management and mitigation for the construction phase of the proposed Project. It aims to ensure that adverse effects from the construction phase of the proposed Project, on the environment are avoided or minimised. It broadly replicates the construction stage mitigation included in Chapters 3-15 of this EIAR and as summarised in Chapter 18.

Post planning, the appointed contractor will take ownership of the Construction Environmental Management Plan (CEMP). Prior to any demolition, excavation or construction, the Construction Environmental Management Plan (CEMP) will be updated by the successful contractor. The CEMP will set out the Contractor's overall management and administration of the construction project. The CEMP will be treated as a live document and communicated to all relevant personnel on site.

The Contractor's CEMP will:

- Be maintained and the procedures implemented by the contractor for the duration of the construction period.
- Manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages.
- Detail measures to be carried out to avoid environmental incidents,
- Detail reporting procedures to be followed if incidents occur including details of responsible person in the construction team.
- Include details of training for all site personnel in the implementation of these procedures as part of the site induction process.

- Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

In addition to the EIAR mitigation measures already included in the CEMP (and mitigation contained in this EIAR), the Contractor will be required to include additional details under the following headings:

- Working hours and days;
- Emergency planning - in the event of a fire, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services;
- Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages);
- Details of construction plant storage, temporary offices and site security arrangements, measures will need to be identified in relation to security of the various sites during construction e.g. controlled access onto site, measures to secure rear gardens, access, etc;
- Truck wheel wash details (including measures to reduce and treat runoff);
- Dust management to prevent nuisance (demolition and construction);
- Site run-off management;
- Noise and vibration management to prevent nuisance (demolition and construction), Work practices, equipment noise control and screening shall be in compliance with BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (together referred to as B.S. 5228);
- Landscape management;

Construction of the development involves the following principal elements:

- Site strip. Earthworks associated with the parks development.
- Construction of footpaths & hard/soft landscaping.
- Buried site services installation. Connection to public services.

18.2.3 CONSTRUCTION TRAFFIC MANAGEMENT PLAN

The following actions will be undertaken in accordance with the framework CTMP:

- All construction staff parking will be accommodated in temporary parking areas within the site, which will have capacity for ca. 100 no. vehicles;
- A Construction Staff Mobility Management Plan (CSMMP) for the site will be developed by the contractor and implemented prior to construction works commencing;
- Just-in-time deliveries will be arranged where feasible;
- Construction materials will, where feasible, be sourced from local suppliers and manufactures, thus, limit likely effects of construction traffic;
- The site will operate from 07:00hrs to 19:00hrs on weekdays and from 07:00hrs to 14:00hrs on Saturday. No works will be undertaken on Sundays or Bank Holidays without the consent of FCC;
- A signage plan will be developed and implemented, providing advance warning of the construction access junction, and likelihood of slow-moving turning traffic to/ from the site;
- Compliance with the CTMP will form part of written contracts between the principal contractor and nominated sub-contractors;
- Methods of handling materials on site will be in accordance with construction site health and safety requirements;

- Where required, construction vehicles will be inspected prior to exit from the site to ensure that dirt is not spread onto the adjoining road, and systems shall be put in place to facilitate this process, including an on-site cleaning area and/ or rumble grid;
- The principal contractor will comply at all times with FCC requirements, including but not limited to hoarding/ scaffolding licences, skip licences etc; and
- The CTMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CTMP will be in accordance with FCC requirements.

A detailed Construction Environmental Management Plan (CEMP) will be prepared post-planning by the selected construction contractor expanding on the outline plan, and the document will be submitted for approval to FCC prior to the commencement of any construction works. The CEMP will include the mitigation contained in this EIAR including the Framework CTMP.

18.3 POPULATION AND HUMAN HEALTH

18.3.1 CONSTRUCTION PHASE

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are likely to result in any significant and likely adverse environmental impacts on population and human health during the construction phases being avoided. Readers are directed to Chapter 17 of this EIAR document which summarises all of the remedial and mitigation measures proposed as a result of this EIAR.

In order to protect the amenities enjoyed by nearby residents, premises and employees a Construction Environment Management Plan will be submitted by the contractor and implemented during the construction phase. The content of the CEMP will be based on the mitigation set out in this EIAR.

With reference to the construction phase of the proposed development, the objectives of the Resource and Waste Management Plan and Operational Waste Management Plan, both prepared by AWN Consulting (contained in Appendix E Volume III of the EIAR and also Chapter 11 of the EIAR) is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with.

18.3.2 OPERATIONAL PHASE

The operational phase will enable the delivery of much needed additional residential accommodation across the surrounding lands. The addition of new roads and trunk infrastructure to the area will also improve the available vehicular and pedestrian access in the area through the creation of new linkages between the existing road network and the establishment of new pedestrian pathways and cycle lanes which help to support and encourage the usage of more active travel modes through the area, which will also have significant social benefits to future communities in the area through the appropriate provision of high-quality public transport connections.

During the operational phase of the development the design of the entire scheme has had regard to Design Manual for Urban Roads and Streets (DMURS) during its design. This will promote a pedestrian friendly environment, promoting sustainable development and reducing the influence of cars. This has the potential to reduce accidents within the proposed development.

For the operational phase, no further specific mitigation is required having regard to the mitigation included within the other chapters of this EIAR.

18.3.3 MONITORING

In relation to the impact of the development on population and human health it is considered that the monitoring measures outlined in this EIAR with regard to the other environmental topics such as water, air quality and climate and noise and vibration sufficiently address monitoring requirements.

18.4 BIODIVERSITY

18.4.1 CONSTRUCTION PHASE

- A project ecologist will be appointed to oversee all works.
- Onsite drains and drainage ditches will be protected from dust, silt and surface water throughout the works.
- Local silt traps established throughout site.
- Mitigation measures on site include dust control, stockpiling away from drains and drainage ditches.
- Stockpiling of loose materials will be kept to a minimum of 40m from drains and drainage ditches.
- Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system.
- Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, drainage ditches, excavations and other locations where it may cause pollution.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the surface water drainage network. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality.
- Petrochemical interception and bunds in refuelling area
- On-site inspections to be carried out by project ecologist.
- During the works silt traps will be put in place to prevent downstream impacts. Maintenance of any drainage structures (e.g. de-silting operations) will not result in the release of contaminated water to the surface water network.
- Prior to site clearance the ecologist and arborist will assess the site works and oversee habitat protection measures.
- Mitigation measures outlined in the bat survey report will be followed. This includes the inspection of buildings on site prior to demolition and the control of light spillage on site into adjacent habitats to avoid light spill of the surrounding hedgerows. Lighting on site during construction will be subject to approval of the ecologist and will not involve the lighting of the hedgerows.
- Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). Should this not be possible, vegetation will be inspected by an ecologist for nesting birds prior to removal.
- Barn swallows are noted nesting on site. Demolition of all buildings on site and the timing of works will be subject to approval of the project ecologist. If nesting barn swallows are on site and works will be carried out within the bird nesting season, NPWS will be consulted prior to works commencing within 20m of the buildings and no works will proceed without the formal approval of NPWS.
- A pre-construction survey will be carried out for terrestrial mammals of conservation importance. If terrestrial mammals of conservation importance are noted on site NPWS will be consulted in relation to removal and the appropriate permissions obtained.

18.4.2 OPERATIONAL PHASE

- A project ecologist will be appointed to oversee completion of all landscape, lighting and drainage works.

- Petrochemical interception will be inspected by the project ecologist to ensure compliance with Water Pollution Acts.
- Post Construction assessment/compliance with proposed lighting strategy Mitigation During Operation
- Mitigation measures will be in place to comply with Water Pollution Acts.
- 20 x 10B Schwegler Swallow Nests will be placed in the vicinity of the built structures to the north of the site in the location of the existing barn, in consultation with and subject to the approval of the project ecologist.
- Replanting and the generation of additional perimeter hedgerows around the housing development will create compensatory nesting habitats for passerine species such as yellowhammer. 20 x bird boxes will also be placed in suitable areas throughout the site to the approval of the project ecologist to create nesting habitats for local bird populations. Open space areas (particularly west of the site) will also create potential nesting habitats for meadow pipit and hunting grounds for kestrels.

18.4.3 MONITORING

18.4.3.1 Construction Phase

A project ecologist will oversee works on site.

18.4.3.2 Operational Phase

A project ecologist will oversee works on site including the lighting, landscape, bird mitigation and drainage networks

18.5 LAND, SOILS AND GEOLOGY

This section outlines the measures that will be employed in order to minimise the impact on land, soils, and groundwater of the proposed development.

18.5.1 CONSTRUCTION PHASE

A Preliminary Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by Paul McGrail Consulting Engineers Ltd, included (See Appendix D, Volume III of the EIAR). It contains the best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, as well as any additional measures required pursuant to planning conditions which may be imposed. This document outlines the best practice construction techniques and methodologies which will be implemented onsite during construction of the proposed development including measures to protect waterbodies. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the CEMP and this EIAR will be employed on site during the construction phase by the Contractor.

The CEMP and mitigation measures set out in this EIAR will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

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

- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

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

According to the subject CEMP, all existing surface water drainage elements shall be maintained free from waste materials generated during the construction of the proposed development, including the initial site clearance and excavation. Routine visual inspections by the contractor shall reduce any risk of excess construction materials causing obstructions to surface water drainage and any potential flooding occurring. A maintenance schedule and operational schedule must be established by the contractor for silt and pollution control measures during the construction period. This should be undertaken in consultation with the relevant statutory authorities.

The CEMP provides actions and measures which will be undertaken for the purpose of environmental management and pollution prevention during the construction phase. As there is potential for run-off to indirectly discharge to the local drainage network consisting of drainage ditches which convey flow and discharge to the Bremore River (and its tributaries, the Clogheder Stream and Clonard Brook Stream). In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- SuDS will be constructed in line with manufacturer's guidelines / best practice methods.
- Foul drainage from site offices and compound, 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.
- Process water used during construction will be disposed of appropriately. Rainwater will also accumulate on the site during construction. This water will be discharged directly via suitable pollution control and attenuation measures either directly to ground within the site or to foul sewer systems via portions of the existing wastewater network.
- Where available proposed permanent connections to the public sewer systems required for the operational phase may be used temporarily for the construction phase, to optimise efficiencies and avoid the creation of new outfalls for temporary construction only.
- A Construction Drainage Control System will be put in place so that all silt laden water will be diverted to temporary settlement storage tanks prior to discharge. This discharge, and the associated pollution control measures, will be subject to the approval of the Local Authority.
- Temporary construction surface drainage and sediment control measures, including the use of SUDS, will be provided before earthworks commence. The drainage design follows the natural topography of the site and utilises petrol/hydrocarbon/oil interceptors, silt traps along all gullies, house inspection chambers and SuDS manholes. Accordingly, all discharges to surface waters will be suitably treated through silt remediation (silt traps) and petrol/hydrocarbon/oil interceptors prior to discharge. There will be no direct discharge of surface water from any element of the works without proper attenuation and treatment.
- Pipe systems and orifices will be checked for blockages or partial blockages.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site.
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.

18.5.1.1 Soil Management

The strategy for controlling and mitigating potential adverse environmental issues related to soil and contamination during construction will include the following, as appropriate:

- Identification and assessment of the potential for residual ground contamination to be presented prior to the start of any excavation works.
- Minimisation of potential risks to site workers as required by the Safety, Health and Welfare (Construction Regulations) 2013.
- Testing and sampling of excavated soils in order to assess the suitability of materials for re-use on site.
- Soils will be stabilised and protected from erosion whilst planting becomes established. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Dust suppression from any contaminated soils by the regular use of water spray during any dry conditions, sheeting of haulage vehicle loads.
- Stockpiling of contaminated materials will be avoided where possible.
- Stockpiles will be treated to prevent windblown dust.
- The handling and storage of any potentially hazardous liquids on site, e.g. fuels and chemicals, will be controlled and best practice guidelines. Storage tanks/container facilities will have appropriate bunding within the designated area.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- If hazardous liquids escape, remedial action will be taken as soon as possible.
- Where unforeseen contamination is identified during the course of the work, specific investigations will be carried out in the areas in question and appropriate health and safety procedures will be implemented during the removal of the material. A strategy will be prepared to identify, analyse, segregate and control existing contaminated materials on site. In addition to the measures above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

18.5.1.2 Run Off & Suspended Solids

- It is anticipated that there will be 10m minimum buffer zone to the water course which on the site which comprise field drainage ditches (no main water courses / river waterbodies exist within the extent of the site boundary).
- Run-off from the working site or any areas of exposed soil shall be channelled and intercepted at regular intervals for discharge to silt remediation / settlement measures. A temporary positive

drainage system shall be installed prior to the commencement of the construction works, to collect surface water runoff from the site during construction. A temporary surface water management will throttle runoff and allow silt and suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall.

- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to discharge directly to the local drainage network.
- Water contaminated with silt will not be allowed to enter a watercourse or drain as it can cause pollution. All parts of the drainage system will be protected from construction runoff to prevent silt clogging the system and causing pollution downstream. Silt reduction measures to prevent this include, early construction of sediment management basins, channelling runoff away from watercourses and surface water drains and erosion prevention measures. Following construction, subsoil that has been compacted during construction should be broken up prior to the re-application of topsoil to reinstate the natural infiltration performance of the ground.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Silt deposited during construction will be removed.
- Soils will be stabilised and protected from erosion whilst planting becomes established.
- Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plant and machinery will also be carried out in bunded areas to minimise risk of any potential pollutants being discharged from the site.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Foul drainage from site offices and compound, 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.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar with the emergency procedures and use of the equipment.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts;
- Silt reduction measures on site and settlement measures (e.g. silt traps and settlement tanks/ponds or equivalent);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m;
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection;
- Construction materials, including aggregates etc. will be stored a minimum of 50-meter buffer distance from any surface water bodies and surface water drainage points;
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination;
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust;
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations;
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

18.5.1.3 Sources of Fill and Aggregates

- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- All fill and aggregate for the proposed development will be sourced from reputable suppliers per the project Contract and Procurement Procedures. All suppliers will be vetted for:
 - Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development;
 - Environmental Management status; and
 - Regulatory and Legal Compliance status of the Company.

18.5.1.4 Cement /concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Irish Water / FCC.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

18.5.1.5 Hydrocarbons and other construction chemicals

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

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowzers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowzers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110%

of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

18.5.2 OPERATIONAL PHASE

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

The proposed development does not include for any bulk chemical storage including fuel storage. As the site will be paved and drained, any fuel spills from cars will drain to the hydrocarbon interceptors on the stormwater drainage system. All stormwater drainage is through the permitted attenuation.

The proposed development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption. The drainage network will consist of attenuation to the green-field runoff using a flow control device (hydrobrake) from the site. Any localised car leaks will therefore be intercepted by and discharge to the proposed surface water / stormwater drainage network and be treated in Petrol interceptors (oil separators) prior to outfalling into the main system and downstream catchment. Therefore, the risk of accidental discharge has been adequately addressed through design. The purpose of these SuDS features is to treat runoff and remove pollutants to improve quality, restrict outflow and control quantity and increase overall amenity value.

18.5.3 MONITORING / REINSTATEMENT

The management of land, soils and ground water during the construction phase will be monitored by the Contractor to ensure compliance with above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

18.5.3.1 Construction Phase

During construction phase the following monitoring measures will be implemented:

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and
- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Pouring of cement-based materials for works will only be carried out in dry conditions.
- Regular inspection of surface water run-off and sediments controls (e.g., settlement & silt remediation measures e.g. silt traps / distilling tanks);

18.5.3.2 Operational Phase

There will be no requirement for groundwater monitoring as there is no likely discharge to ground, long term dewatering or abstraction of groundwater.

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to soil or groundwater.

18.6 HYDROLOGY, WATER

The design has taken account of the potential impacts of the development on the hydrological environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding water bodies. This section outlines the measures that will be employed in order to minimise the impact on land, soils, and groundwater of the proposed development.

18.6.1 CONSTRUCTION PHASE

A Preliminary Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by Paul McGrail Consulting Engineers Ltd, included with the application documentation and contained in this EIAR (see Appendix D, Volume III of the EIAR). It contains the best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, as well as any additional measures required pursuant to planning conditions which may be imposed. This document outlines the best practice construction techniques and methodologies which will be implemented onsite during construction of the proposed development including measures to protect waterbodies. The CEMP sets out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The mitigation and control measures outlined in the CEMP and this EIAR will be employed on site during the construction phase.

The CEMP and mitigation measures set out in this EIAR will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Manager and Ecological Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

- Construction Industry Research and Information Association (CIRIA, 2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741); and
- Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

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

According to the subject CEMP, all existing surface water drainage elements shall be maintained free from waste materials generated during the construction of the proposed development, including the initial site clearance and excavation. Routine visual inspections by the contractor shall reduce any risk of excess construction materials causing obstructions to surface water drainage and any potential flooding occurring. A maintenance schedule and operational schedule must be established by the contractor for silt and pollution control measures during the construction period. This should be undertaken in consultation with the relevant statutory authorities.

The CEMP provides actions and measures which will be undertaken for the purpose of environmental management and pollution prevention during the construction phase. As there is potential for run-off to indirectly discharge to the local drainage network consisting of drainage ditches which convey flow and discharge to the Bremore River (and its tributaries, the Clogheder Stream and Clonard Brook Stream). In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- SuDS will be constructed in line with manufacturer's guidelines / best practice methods.
- Foul drainage from site offices and compound, 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.
- Process water used during construction will be disposed of appropriately. Rainwater will also accumulate on the site during construction. This water will be discharged directly via suitable pollution control and attenuation measures either directly to ground within the site or to foul sewer systems via portions of the existing wastewater network.
- Where available proposed permanent connections to the public sewer systems required for the operational phase may be used temporarily for the construction phase, to optimise efficiencies and avoid the creation of new outfalls for temporary construction only.
- A Construction Drainage Control System will be put in place so that all silt laden water will be diverted to temporary settlement storage tanks prior to discharge. This discharge, and the associated pollution control measures, will be subject to the approval of the Local Authority.
- Temporary construction surface drainage and sediment control measures, including the use of SuDS, will be provided before earthworks commence. The drainage design follows the natural topography of the site and utilises petrol/hydrocarbon/oil interceptors, silt traps along all gullies, house inspection chambers and SuDS manholes. Accordingly, all discharges to surface waters will be suitably treated through silt remediation (silt traps) and petrol/hydrocarbon/oil interceptors prior to discharge. There will be no direct discharge of surface water from any element of the works without proper attenuation and treatment.
- Pipe systems and orifices will be checked for blockages or partial blockages.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site.
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.

18.6.1.1 Run Off & Suspended Solids

Rainfall at the construction site will be managed and controlled for the duration of the construction works until the permanently intercepted and attenuated surface water drainage system of the proposed site is complete. In the meantime, rainwater will continue to discharge to ground as current.

- It is anticipated that there will be 10m minimum buffer zone to the water course which on the site which comprise field drainage ditches (no main water courses / river waterbodies exist within the extent of the site boundary).
- Run-off from the working site or any areas of exposed soil shall be channelled and intercepted at regular intervals for discharge to silt remediation / settlement measures. A temporary positive drainage system shall be installed prior to the commencement of the construction works, to collect surface water runoff from the site during construction. A temporary surface water management will throttle runoff and allow silt and suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to discharge directly to the local drainage network.
- Water contaminated with silt will not be allowed to enter a watercourse or drain as it can cause pollution. All parts of the drainage system will be protected from construction runoff to prevent silt clogging the system and causing pollution downstream. Silt reduction measures to prevent this include, early construction of sediment management basins, channelling runoff away from watercourses and surface water drains and erosion prevention measures. Following construction, subsoil that has been compacted during construction should be broken up prior to the re-application of topsoil to reinstate the natural infiltration performance of the ground.
- During construction, any surfaces which are intended to enable infiltration must be protected from compaction. This includes protecting from heavy traffic or storage materials.
- Silt deposited during construction will be removed.
- Soils will be stabilised and protected from erosion whilst planting becomes established.
- Hydrocarbons or any hazardous chemicals will be stored in specific bunded areas. Refuelling of plants and machinery will also be carried out in bunded areas to minimise risk of any potential pollutants being discharged from the site.
- Pollution control measures will be implemented to control run-off from the site and prevent run-off which is potentially contaminated with sediments or hazardous chemicals entering the drainage network.
- Foul drainage from site offices and compound, 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.
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available on site. Construction staff will be familiar with the emergency procedures and use of the equipment.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- Silt reduction measures on site and settlement measures (e.g. silt traps and settlement tanks/ponds or equivalent);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.

- Construction materials, including aggregates etc. will be stored a minimum of 50-meter buffer distance from any surface water bodies and surface water drainage points.
- Aggregate materials such as sands and gravel will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

18.6.1.2 Wastewater Management

Foul drainage from site offices and compound, 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.

18.6.1.3 Cement /concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Irish Water / FCC.

Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

18.6.1.4 Hydrocarbons and other construction chemicals

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

- Designation of bunded refuelling areas on the Site;
- Provision of spill kit facilities across the Site;
- Where mobile fuel bowzers are used, the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowzers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognized standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

18.6.1.5 Human Health and Population

It has been established (Section 6.3.3) that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Clonard Brook stream, Clogheder Stream or the Bremore River. On a precautionary basis, the mitigation measures set out above in Section 6.6 will be implemented during the construction works for the protection of human health and populations.

18.6.1.6 Human Health and Population

It has been established (Section 6.5.2) that while, there is a potential of accidental discharges during the construction phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures previously set out in Section 6.6 above, will be implemented during the construction works for the protection of surface water status and achievement of the programme of measures.

18.6.2 OPERATIONAL PHASE

18.6.2.1 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The surface water design has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers for adoption.

The proposed development design includes hardstand cover across the site, and the stormwater drainage network design includes sustainable drainage systems (SuDS). These measures by design ensure the

stormwater leaving the site is to be attenuated and treated within the new development site boundary to ensure suitable quality, before discharging to the Clonard Brook stream, which subsequently outfalls to the nearby Bremore River.

Any localised car leaks will therefore be intercepted by and discharge to the proposed surface water / stormwater drainage network and be treated in Petrol interceptors (oil separators) prior to outfalling into the main system and downstream catchment. Therefore, the risk of accidental discharge has been adequately addressed through design. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. The SuDs design is set out in the Engineering Services Report (2025) and uses above-ground storage detention basins (interception system), underground attenuation storage, bioretention systems, flow control devices (Hydrobrake), grass swales, modular permeable paving (porous surfacing), and petrol (hydrocarbon) interceptors.

The proposed SuDS measures will reduce the risk of flooding downstream of the subject site. The purpose of the SuDs design is to:

- Treat runoff and remove pollutants to improve quality;
- Restrict outflow and to control quantity;
- Increase amenity value.

The proposed development does not include for any bulk chemical storage including fuel storage. As the site will be paved and drained, any fuel spills from cars will drain to the petrol (hydrocarbon) interceptors on the stormwater drainage system. All stormwater drainage is through the permitted attenuation.

According to Fingal 2023-2029 Strategic Environmental Assessment (SEA), objective IUO26 states developments must 'ensure a minimum 10m wide riparian buffer strip measured from the top of the bank either side of all watercourses', which applies to lands within development boundaries as per FCC. A riparian buffer along the Clonard stream has been established and landscaped as part of the Balbriggan Phase 4 residential development. This will improve the flow and habitat characteristics of the stream both on and off site. The riparian zones will be fisheries compliant and will contain features for biodiversity enhancement.

The layout of the proposed surface water drainage network is shown on Paul McGrail Consulting Engineers Ltd (2024) Drawing Set included with this Application. It is proposed to strictly separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the surface water and wastewater sewer networks respectively.

18.6.2.2 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water flow; measures have been incorporated in the design to mitigate these potential impacts.

As set out in the Engineering Services Report (2025), flow restriction is achieved by means of a hydro-brake installed at the outfall of each surface water catchment within the development, with the excess storm water stored on site for the duration of the storm periods of up to 1 in 100 years. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100-year event to the detention basins and underground attenuation storage without any overland flooding.

Surface water runoff exceeding the allowable outflow rate for the catchment will be stored in detention basins for rainfall events up to a 1 in 100-year return period with an allowance for climate change of 20%. The proposed development includes a new surface water network which will mitigate any potential for pluvial risk to the site in line with SuDS measures.

18.6.3 MONITORING

The management of land, soils and ground water during the construction phase will be monitored by the Contractor to ensure compliance with above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

18.6.3.1 Construction Phase

During construction phase the following monitoring measures will be implemented:

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off to surface waterbodies and drainage ditches which comprise the local drainage network; and
- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc). Pouring of cement-based materials for works will only be carried out in dry conditions.
- Regular inspection of surface water run-off and sediments controls (e.g., settlement & silt remediation measures e.g. silt traps / distilling tanks).

18.6.3.2 Operational Phase

No future surface water monitoring is proposed for the proposed development due to the low hazard potential at the site.

Hydrocarbon / petrol interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions.

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges the local surface water drainage network / catchment.

18.7 AIR QUALITY

18.7.1 CONSTRUCTION PHASE

The proposed development has been assessed as having a high risk of dust soiling impacts and a medium risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 7.7.1). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. Mitigation measures for high-risk sites as recommended by IAQM construction dust guidance are detailed in [Table 7.16](#).

Table 18.1: Site Specific Mitigation Measures

Mitigation Measure
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

Mitigation Measure
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in the IAQM Guidance. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.
Site Management
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Hold regular liaison meetings with other high risk construction sites within 500m 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.
Monitoring
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
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 active for an extensive period
Avoid site runoff of water or mud.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, 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.

Mitigation Measure
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 (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
Operations
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
Use enclosed chutes and conveyors and covered skips.
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management
Avoid bonfires and burning of waste materials.
Measures Specific to Demolition
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible to provide a screen against dust
Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
Avoid explosive blasting, using appropriate manual or mechanical alternatives.
Bag and remove any biological debris or damp down such material before demolition.
Measures Specific to Earthworks
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable.
Only remove the cover in small areas during work and not all at once.
Measures Specific to Construction
Avoid scabbling (roughening of concrete surfaces) if possible.
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Mitigation Measure
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
Measures Specific to Trackout
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
Record all inspections of haul routes and any subsequent action in a site log book.
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowzers 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 10m from receptors where possible.

18.7.2 OPERATIONAL PHASE

No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant.

18.7.3 MONITORING

18.7.3.1 Construction Phase

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m²/day during the monitoring period of 30 days (+/- 2 days).

Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

18.7.3.2 Operational Phase

There is no monitoring recommended for the operational phase of the proposed development as impacts to air quality are predicted to be imperceptible.

18.8 CLIMATE

18.8.1 INCORPORATED DESIGN MITIGATION

Several measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, integration of SuDs and nature based solutions to adequately disperse water and reduce the runoff rate of rainfall into drainage systems resulting in a robust flood management and drainage design. These measures have been considered when assessing the vulnerability of the proposed development to climate change (Section 8.5.1). Landscaping planting elements have been chosen with consideration for climate change impacts in future years.

In relation to operational energy usage information from the Climate Action and Energy Statement prepared for the proposed development has been used to inform this assessment. The proposed development will be Nearly Zero Energy Building (NZEB) compliant in line with the *Technical Guidance Part L (2022) of the Building Regulations* requirements for the residential elements and Technical Guidance Part L (2022), buildings other than Dwellings for the creche and pavilion. As per the Climate Action and Energy Statement the following key elements will be included in the design parameters.

The following key design measures will be implemented to minimise operational energy demand and associated carbon emissions:

1. Passive Design Strategies

e) Enhanced Building Fabric Performance:

- Apartments: Walls – 0.18 W/m²K; Roof – 0.16 W/m²K; Floor – 0.15 W/m²K
- Houses: Walls – 0.14 W/m²K; Roof – 0.15 W/m²K; Floor – 0.12 W/m²K

f) High-Performance Glazing: Windows with U-value of 1.2 W/m²K and a minimum solar factor of 0.7 or better)

g) Air Permeability Targets:

- Apartments: ≤ 3 m³/hr/m²
- Houses: ≤ 0.25 m³/hr/m²

h) Thermal Bridging: Y-factor of 0.15 with detailed attention to linear thermal bridge detailing.

2. Building Services and Energy Systems

c) Heating and Hot Water:

- Apartments: Exhaust air heat pumps, with radiator heating and 180L hot water cylinders.
- Houses: Air to water heat pumps with radiator heating and 200L hot water cylinders.

d) Lighting:

- 100% energy-efficient lighting in all residential units with provision for Compact Fluorescent Lamps (CFLs).

3. Energy Performance Targets

- e) Building Energy Ratings (BER): A2 for residential units (apartments and houses) and A3 for commercial units.

f) Energy Performance Coefficients (EPC):

- < 0.3 for residential units
- < 1.0 for commercial units

g) Carbon Performance Coefficients (CPC):

- < 0.35 for residential units
- < 1.15 for commercial units

h) Renewable Energy Ratio (RER): Minimum of 0.2 across all unit types.

These measures are aligned with the objectives of the CAP25 and will contribute to reducing the operational carbon footprint of the development, ensuring long-term energy efficiency and environmental sustainability. These identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the CAP25.

18.8.2 CONSTRUCTION PHASE

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. The following measures to reduce the embodied carbon of the construction works are:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled.
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- Sourcing materials locally where possible to reduce transport related CO₂ emissions.
- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible. For example, a 30% minimum clinker replacement in cement may be utilised in line with the requirements for public bodies.

The project developer, Glenveagh Properties, has committed to achieving Net Zero by 2050 across its whole business. Therefore, the proposed development will be built with carbon reduction and sustainability in mind and will include reductions of embodied emissions during the construction phase. Glenveagh Properties have published a Net Zero Transition Plan and Annual Reports which detail a commitment to achieving Net Zero by 2050.

The above listed measures are supported by Glenveagh Properties PLC's Net Zero Transition Plan 2023, published in March 2023, which identifies the sources of Glenveagh Properties PLC's emissions and proposed measures to reduce these. A commitment to achieve a 55% reduction in Scope 3 (construction

methods) emissions intensity (tCO₂e per 100 m² of complete floor area) by 2031 (using 2021 as the baseline year) will involve supplier engagement to make informed procurement decisions, engaging with subcontractors to support their transition to less carbon intensive fuels (diesel and gas oil is currently the norm) and investing in innovation of designing and building homes to reduce their associated embodied carbon. A reduction target of 46.2% by 2031 is also set in the plan for Scope 1 and 2 emissions (company operations). All targets have been validated by the Science Based Targets initiative (SBTi).

The Science Based Targets initiative (SBTi) is a corporate climate action organisation, incorporated as a charity, which develops standards, tools and guidance enabling companies to set GHG emissions reductions targets in line with net-zero by 2050 at the latest. Science-based targets show companies and financial institutions how much and how quickly they need to reduce their GHG emissions to prevent the worst effects of climate change (SBTi, 2024a). Glenveagh Properties PLC is one of the over 4,000 companies and financial institutions who have had their emission reduction targets validated by the SBTi (Glenveagh's targets can be searched in the SBTi's target dashboard (SBTi, 2024b)).

Glenveagh Properties PLC's Full Year 2024 Results, published in March 2025, identified that Scope 3 emissions are 7% below the 2021 baseline, measured on an intensity basis (tCO₂e per 100m²). This is primarily due to the focus on the energy efficiency of the residential units. Scope 1 and 2 emissions decreased by 47% compared to 2021 baseline, which can be attributed to the first full year HVO (hydrotreated vegetable oil) was used across all sites as a replacement to diesel.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Throughout detailed design and construction phase, guidance documents to inform with design detail decisions shall be reviewed, e.g. the EU Commission Technical Guidance on Adapting Buildings to Climate Change (European Commission, 2021a), LETI emergency design guide (LETI, 2020), and the latest IPCC report.

18.8.3 OPERATIONAL PHASE

The proposed development has been designed to reduce the impact on climate due to energy usage during operation. These measures are outlined in Section 8.5.1 above as incorporated design mitigation. No further operational phase mitigation is proposed.

18.8.4 MONITORING

Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the proposed development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the proposed development is not meeting its targets, further mitigation will be put in place.

Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

18.9 NOISE AND VIBRATION

18.9.1 CONSTRUCTION PHASE

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the public.

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, and also by referring to the preliminary Construction Environmental Management Plan (CEMP).

18.9.1.1 Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether said item can be replaced with a quieter alternative.

18.9.1.2 Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures will be considered:

- The use lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.

- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

18.9.1.3 Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

On typical piling sites the major sources of noise are essentially mobile, and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

18.9.1.4 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation.

18.9.1.5 Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to

particularly noisy construction activity (e.g. piling), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

18.9.1.6 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

18.9.2 OPERATIONAL PHASE

18.9.2.1 Building Services and Plant

The assessment outlined previously has specified noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable.

To achieve these noise limits, consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques. Some examples of these measures are as follows:

- Duct-mounted attenuators on the atmosphere side of air moving plant;
- Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas;
- Solid barriers screening any external plant; and
- Anti-vibration mounts on reciprocating plant.
-

In addition to the above, the following measures will be adopted to minimise potential noise disturbance for neighbours:

- All mechanical plant items (e.g. motors, pumps etc.) shall be regularly maintained to ensure that excessive noise generated by any worn or rattling components is minimised;
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document; and
- Plant items will be selected such that site noise emissions do not contain tonal or impulsive characteristics at nearby noise sensitive locations.

18.9.3 MONITORING

18.9.3.1 Construction Phase

During the construction phase, noise monitoring will be undertaken at sample locations representative of the nearest sensitive locations to ensure construction noise limits outlined in Table 9.1 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: *Acoustics – Description, measurement and assessment of environmental noise Part 1* (2016) and *Part 2* (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.

It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

18.9.3.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be imperceptible.

18.9.4 OPERATIONAL PHASE – ACOUSTIC DESIGN STATEMENT

The Acoustic Design Statement (ADS) has been presented separately as it refers to the inward impact assessment of the residential properties within the development, rather than the outward impact assessment carried out in Section 9.6.

18.9.4.1 Stage 1 – Noise Risk Assessment

18.9.4.1.1 Methodology

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment. Figure 9.1 previously presents the basis of the initial noise risk assessment, it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

It should be noted that a site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period, and the site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times a night.

Paragraph 2.9 of ProPG states that:

“The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a “typical worst case” 24 hour day either now or in the foreseeable future.”

ProPG states the following with respect to the initial risk assessment:

“The risk assessment should not include the impact of any new or additional mitigation measures that may subsequently be included in development proposals for the site and proposed as part of a subsequent planning application. In other words, the risk assessment should include the acoustic effect of any existing site features that will remain (e.g. retained buildings, changes in ground level) and exclude the acoustic effect of any site features that will not remain (e.g. buildings to be demolished, fences and barriers to be removed) if development proceeds.”

18.9.4.1.2 Noise Risk Assessment Conclusion

Giving consideration to the noise levels presented in Section 9.3.9 earlier, the initial site noise risk assessment has concluded that the level of noise risk across the site is ‘low to medium risk’.

ProPG states the following with respect to low and medium risks:

Low Risk At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.

Medium Risk As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised,

and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.

18.9.4.2 Stage 2 Assessment

18.9.4.2.1 Element 1 – Good Acoustic Design Principles

Section 2.23 of the ProPG outlines the following checklist for Good Acoustic Design:

- Check the feasibility of relocating or reducing noise levels from relevant sources;
- Consider options for planning the site or building layout;
- Consider the orientation of proposed building(s);
- Select construction types and methods for meeting building performance requirements;
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc;
- Assess the viability of alternative solutions; and,
- Assess external amenity area noise.

In the context of the proposed development, each of the considerations listed above have been addressed in the following subsections.

Relocation or Reduction of Noise from Source

Due to the size and scale of the residential units in the development it is not practicable to screen the buildings from the main noise source of the road.

Planning, Layout and Orientation

As part of the project design, the majority of the amenity areas are set back from the roads boundaries and screened from the road traffic noise by the developments buildings. The area identified with elevated noise levels front the Clonard Road and new proposed road however only a portion of the rooms within face the roads, with the remaining facades will have enhanced glazing and ventilation specifications.

Selection Construction Types for Meeting Building Regulations

Constructions for external walls and roof of the development will offer significantly higher levels of sound insulation performance compared to the glazing, hence noise ingress via this pathway will be minimal. As is typically the case in any residential building, the glazed elements and any required ventilation paths to achieve compliance with Part F of the Building Regulations will be the weakest elements in the façade in terms of sound insulation performance.

Consideration will therefore be given to the provision of suitable glazing and acoustic ventilators where required to achieve the required level of sound insulation to control both road traffic and air traffic noise intrusion. For units where it will not be possible to achieve the desirable internal acoustic environments with windows open, the proposal here will be to provide dwelling units with glazed elements and ventilators that have good acoustic insulation properties so that when the windows are closed the noise levels internally are good. Inhabitants will be able to open the windows if they wish, however, doing so will increase the internal noise level. This approach to mitigation is supported in ProPG where it states the following (note emphasis has been added in bold),

*“2.22 Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; **occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open.** Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions*

in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents “

2.34 Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide “whole dwelling ventilation” in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal LAeq target noise levels should not generally be exceeded.”

It is very important to note that it is impractical to achieve the good internal noise levels with windows open across the vast majority of development sites in close proximity to major infrastructure such as roads or airports. Such sites would need to be classified as having a negligible risk in accordance with the ProPG noise risk assessment approach. For this reason, there are no guidance documents either at a local level or an international level that AWN is aware of which would support the approach of achieving the ideal internal noise levels only in the open window scenario. It is therefore considered entirely correct and justifiable to provide building facades with a moderate degree of sound insulation such that with windows closed but vents opened a good internal acoustic environment is achieved.

Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc.

The acoustic design measures that are proposed as part of the design i.e. any upgraded glazing or acoustic passive ventilation are considered to be cost neutral and do not have any significant impact on other issues.

Assess Viability of Alternative Solutions

ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB LAeq,16hr.”

It is noted that a proportion of the amenity areas located on site may be just above the desirable level of 55 dB LAeq,16hr, it is not possible to reduce the noise level across external spaces, due to road traffic noise being the dominant noise source. It is noted that the majority of gardens of new houses will achieve these external noise levels. Efforts have been made to provide private external space to each dwelling to the rear of the houses, and a large external amenity area is located serving the proposed units.

18.9.4.2.2 Element 2 – Internal Noise Levels

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 (2014) which are set out in Table 9.8.

In addition to these absolute internal noise levels, ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal LAeq values by up to 5 dB can still provide reasonable internal conditions.

Discussion on Open/Closed Windows

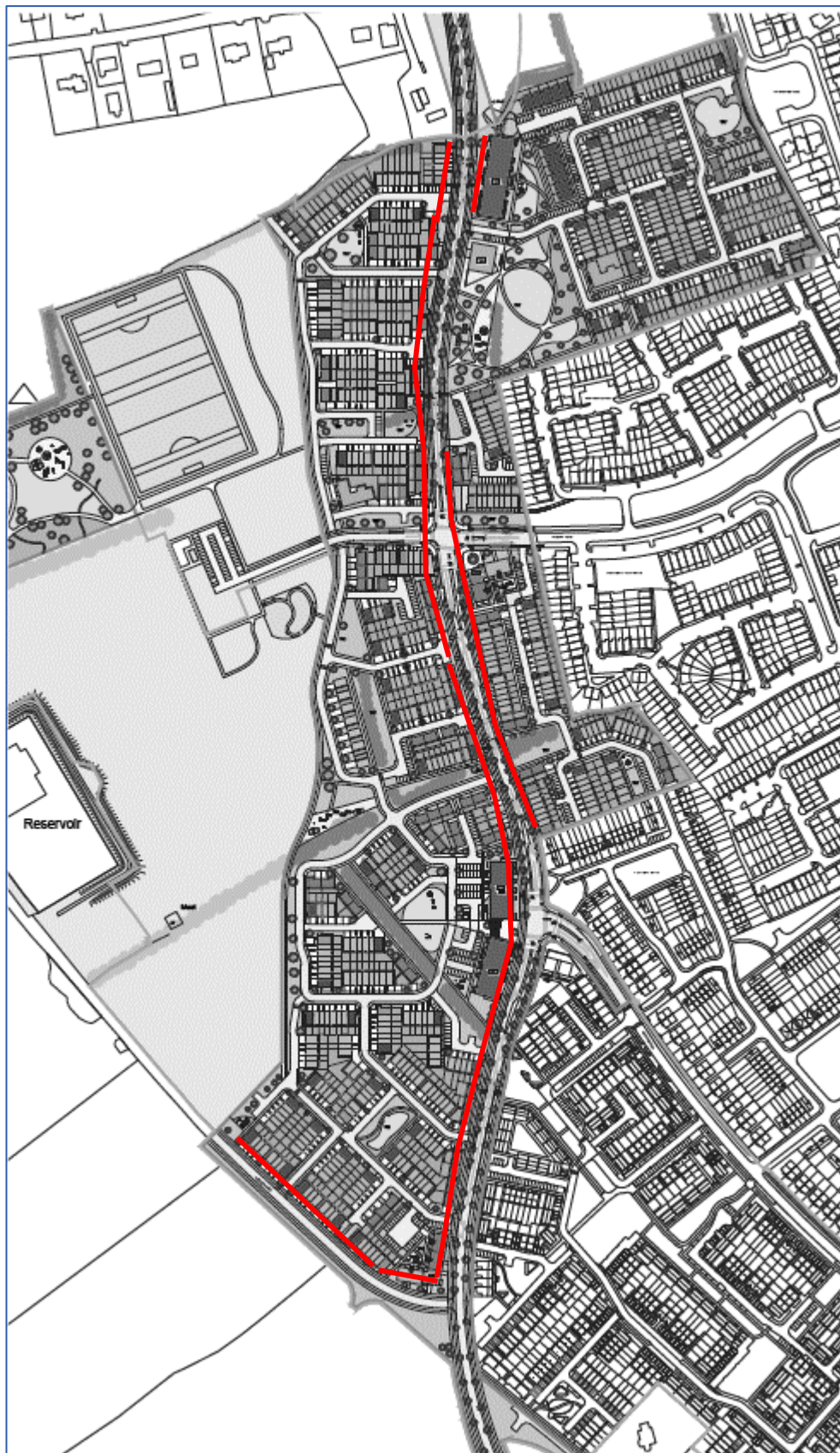
The typical level of sound reduction offered by a partially open window falls in the region of 10 to 15 dB. Considering the design goals outlined in Table 9.8 and a sound reduction across an open window of 15 dB, the free-field noise levels that would be required to ensure that internal noise levels do not exceed good (i.e. at or below the internal noise levels) or reasonable internal noise levels (i.e. 5 dB above the internal noise levels) have been summarised in Table 9.18.

Table 18.2: External Noise Levels Required to Achieve Internal Noise Levels

Level Desired	Day (07:00 to 23:00 hrs)	Night (23:00 to 07:00 hrs)
Good (i.e. at or below the internal noise levels from BS 8233)	50 – 55 dB $L_{Aeq,16hr}$	45 dB $L_{Aeq,8hr}$
Reasonable (i.e. 5 dB above the internal noise levels from BS 8233)	55 – 60 dB $L_{Aeq,16hr}$	50 dB $L_{Aeq,8hr}$

The baseline noise levels presented in Section 9.3 indicate that internal noise levels will not meet either the 'good' or 'reasonable' internal noise criteria when windows are open for rooms overlooking the main road network, hence, mitigation will be required for those facades. Fig 9.5 indicates the rooms or facades that require mitigation to meet the guidance indoor noise thresholds.

Figure 18.1: Facades with needed upgraded glazing and ventilation



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Glazing

Taking account of the measured day and night-time noise levels associated with road traffic from UN1, and calculated noise values from the proposed future road, the glazing specifications in Table 9.19 are applied to the identified facades discussed above. For all other facades within the development there are no specific glazing requirements beyond standard double glazing to meet reasonable internal noise levels at all development buildings

Figure 18.2: Minimum Sound Insulation Performance Requirements (SRI) to Glazing

Element	Octave Band Sound Reduction Index – dB R						dB R _w
	125	250	500	1k	2k	4k	
Glazing SRI to identified facades	24	22	29	39	33	38	33

The specifications provided in Table 9.19 are those determined to achieve the internal noise levels within bedrooms and living rooms in accordance with the design criteria from BS 8233 (2014). This acoustic SRI is not significant in terms of uplift above a standard glazing configuration that would be installed and can be achieved with double glazed system. Alternative specifications will be acceptable provided the internal ambient noise criteria outlined in Table 9.7 can be achieved. During the detailed design stage, the acoustic performance of any glazing systems installed to noise sensitive internal areas will be reviewed alongside the building design to determine compliance with the relevant internal design criteria.

The glazing specifications relate to bedrooms and living spaces. For staircore and windows to non-sensitive spaces, standard double glazing provides a suitable level of sound insulation.

It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing system. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc.

Wall Construction

In general, all wall constructions (i.e. blockwork or concrete) offer a high degree of sound insulation, much greater than that offered by glazing systems. Therefore, noise intrusion via the wall construction will be minimal. The calculated internal noise levels across the building façade have assumed a minimum sound reduction index of 50 dB R_w for this construction.

Ventilation

The ventilation strategy for the development will be in accordance with Part F of the Building Regulations and will be finalised at the detail design stage. Options which will be considered to achieve compliance with background ventilation requirements will be a closed heat recovery system, adjustable hit-and-miss acoustic ventilators or trickle vents built into the façade or window frames, respectively.

For the proposed development, where passive ventilation forms part of the design, the inclusion of any window trickle vents or through wall vents will be required to achieve a sound insulation performance shown in table 9.20 for apartments when the vent is in the open position. This applies to bedroom, living rooms, study room, kitchens, and other noise sensitive internal spaces. For toilets and stairwells, an acoustic vent is not required.

Figure 18.3: Minimum Sound Insulation Performance Requirements (SRI) to Glazing

Element	Octave Band Sound Reduction Index – dB R						dB D _{n,e,w}
	125	250	500	1k	2k	4k	

Ventilation SRI to identified facades	33.1	32.1	30.8	37.3	46.7	46.8	37

18.9.4.2.3 Element 3– External Amenity Area Noise Assessment

As previously discussed, some external amenity areas are not expected to achieve the recommended 55 dB $L_{Aeq,16hr}$ in proximity to the road but can be largely achieved across the majority of the site. Nonetheless, where possible, the location of private gardens of the site have building layouts designed to provide screening from the Clonard road traffic noise sources in the vicinity of the site.

18.10 LANDSCAPE AND VISUAL IMPACT ASSESSMENT

18.10.1 INCORPORATED DESIGN MITIGATION

The proposed development has been designed to take account of the relevant planning designations on this site and is in accordance with the requirements of the Fingal Development Plan (FDP) 2023-2029. The zoning and policy objectives informed the arrangement of the residential layout and core open space including concentrating residential development in the “RA – Residential Area” zoned lands to the east of the site.

Visualisation 10.3: Proposed Development (Courtesy of 3DDB)



As part of the design process, existing environmental and technical constraints and assets were reviewed with the design team and the landscape design considerations focused on provision of public realm areas, open spaces, playgrounds, and linkages / connectivity within the proposed development site that would be accessible to all members of the community. The objectives include creation of different landscape treatments including avenue tree types and building types to create identifiable character zones.

Visualisation 10.4: Proposed Development (Courtesy of 3DDB)



In terms of Green Infrastructure and Connectivity, the following elements are designed into the proposed development:

- The main vehicular, cyclist and pedestrian access will be a core C-Ring road linking Flemington Lane to the north and Clonard Road to the south-west with associated cyclist and pedestrian links;
- The main access road through the site, is designed to provide a strong “green” boulevard character aligned with incidental open space including avenue trees, landscape areas, broad walking routes and cycleways. Off this is a hierarchy of roads and interconnected streets to enable residents, users and visitors to move in a sustainable manner (as alternative options to vehicle trips) to the childcare facility and towards Flemington Park to the north;
- Link paths across the site will provide a safe environment for walkers, runners and cyclists across the site and to the core and linear open spaces including to the Class 1 open space to the west and thirteen LEAP / LAP play areas throughout the proposed development;
- Landscape areas are retained and enhanced towards the site boundary and throughout the site to allow for connected habitat creation and wildlife corridors. This will include areas managed for biodiversity and ecosystems that will see a net gain of biodiversity on the site;

In terms of the core Open Space, the following elements are designed into the proposed development:

All age groups will be catered for with the layout based on best practice in terms of safe and aesthetic design proposals that will complement interaction between varied groups with Universal Design being the overriding consideration. This will include provision of playgrounds to cater for the recreational and educational requirements of children of residents. These will be designed to be both secure and overlooked in line with RoSPA safety advice and European Standard (EN 1176). Playgrounds are located well away from any ESB infrastructure;

The proposed layout includes set aside areas of public open space which is interconnected by landscaped links or pedestrian paths having a functional, amenity, environmental and aesthetic purpose with a mix of informal and formal landscape character with recreational and amenity spaces. This extends to 5.26 hectares and is equivalent to over 20% of the Application Site lands.

Figure 18.4: Proposed Open Space and Play Areas



- On-going open space management plans will identify areas that can be managed to encourage habitat creation as the designed landscape measures mature and evolve;
- Retention of existing hedgerow extending to 907 linear meters in length to the core of site that will form part of public and incidental open space. This hedgerow will be gapped up and augmented with native species. (This should be measured against the fact that the consented development on these lands has planning consent to remove nearly all the internal hedgerows);
- The site layout has been designed in a manner that allows for natural surveillance of all open spaces with houses fronting these areas to give a feeling of security and encourage positive social behaviour;
- The design sets out a clear distinction between public, communal and private spaces; and
- Open spaces are designed with consideration given to their long term management ensuring this is not onerous with heavy resource requirements.

18.10.2 CONSTRUCTION PHASE

The proposed development will entail significant groundworks to facilitate construction of the residential properties, associated buildings, open space and infrastructure. A key consideration in landscape terms during the construction period is ensuring the retention and storage of suitable top soil to provide an appropriate growing medium (i.e. soil) for successful establishment on soft landscape treatments. Materials or rock excavated from the existing site will be crushed for re-use where possible thus negating the requirement for import of additional fill. All topsoil will be retained for use on site with much of it being reused in the retained open spaces.

During the construction period hoardings are likely to be installed to the construction area to restrict access and views into the site. Publicity material may be displayed on the hoardings to inform the public and passers-by about the proposed development.

The retained internal and boundary hedgerows will be managed to remove dead, dying and dangerous branches and excessive scrub or brier. The works will also entail management of trees on site suffering from Ash die-back disease. For retained trees, the recommendations given in BS5837:2012 Guide for trees in relation to construction will be adopted to ensure site and tree safety. The works would be undertaken in winter months. Further works would include control of disturbance including dust, mud, noise, lighting.

Table 18.3: Summary of Construction Works Effects – Post Mitigation

Area	Sensitivity	Summary	Magnitude	Significance	Significant (Yes / No)
Application Site	Medium	Loss of vegetation and change of baseline setting from open fields to construction site.	Major	Slight Adverse	Major. Yes
Flemington Lane	Medium	Changes to local sense of place but works mostly screened from these areas	Moderate	Slight Adverse	Major. Yes
Clonard Road	Medium	Changes to local sense of place related to new road junction and change of views.	Major	Slight Adverse	Medium. No
West Balbriggan	Medium	Changes to local sense of place but works partially screened from club premises.	Slight / Moderate	Slight Adverse	Medium. No
Balbriggan	Medium / High	Changes to peripheral town edge area from construction works	Slight	Slight Adverse	Low. No.
LCA Coastal Character Type	Medium / High	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible. No.

18.10.3 OPERATIONAL PHASE

The appearance of the development is a key influence on how the site is perceived by the public, so the proposed development includes for extensive landscape and open space works with the overall objective of providing a layout that integrates the development into the surrounding landscape and visually blends into the Flemington / Clonard / Balbriggan area.

The total area of open space or landscape areas extends to 5.26 hectares with this distributed evenly across the site including Class One Open Space and Public Open space including eight pocket parks and one main public open space with a LEAP (play area) aside a community building. Further open space is associated with residual and private amenity or residential areas with the objective of coordinated landscape connectivity, visual consistency, and green infrastructure integration that is accessible to all and serves the amenity needs of proposed residents. Thirteen designated play areas are proposed across the site. These and the public open spaces are designed to be overlooked from the surrounding development to ensure safety in design with multiple connections and access points offered throughout. Further integrated elements relating to the landscape in terms of remediation, mitigation and enhancement include the following:

- The C-Ring road leading into and through the development will be planted with street trees in broad grass verges and park edge to create a strong green link for motorists, cyclists and pedestrians;
- Public Open Space extends to 2.87 hectares and includes extensive planting with a mix of native and ornamental tree species to create a natural environment with colour and seasonal interest.

The general principle will correspond with FDP Objectives for Open Space provision with recreational and amenity spaces to the core of the site in a major new parkland space;

- Provide a framework of spaces to create focal points to the design and identify functional nodes such as entrances of buildings, allowing people to gather without interfering with residents in their apartments / houses and spaces to cater for needs of children;
- Biodiversity and habitat creation or enhancement is a core objective in terms of landscape design to the site edge and include retention of key hedgerows to the south of the proposed development. Hedgerows Nos. 1, 2 (part), 3 (majority), 11, 13, 14, 33 (part), 34, 37, 39, 40, 41, 42, 43, 44, 46 (part), 57, 63, 64, 70, 71, 72 & 93 will all be retained and protected;
- Landscape works are proposed to enhance accessibility to and the setting of the Holy Well (NIAH DU001-004) to the north of the site with the objective of protecting the existing environment surrounding the well and preserve the well itself. The majority of vegetation will be retained and protected though brier and gorse will be managed;
- Due regard has been given with the landscape design coordinating with engineers in terms of Sustainable Urban Drainage Systems (SuDS) as required in terms of swales, compensation areas and retained watercourses or culverts;
- The planting of 466 no. semi-mature trees will give instant impact and provide enclosure and screening. High canopy trees or ones that will be easy to manage are specified to be used along main roads and streets to ensure vehicular sightlines are retained. No lime trees (*Tilia cordata*) are to be planted along streets;
- Provision of playgrounds to cater for the recreational and educational requirements of children of residents but comply with the distance requirements as set out in the FDP of 25m between them and nearest residential properties. No play areas are located in SUD areas; and
- The open spaces are designed with consideration given to long-term management ensuring this is not onerous with heavy resource requirements.

The landscape works include for planting of trees within parkland areas and the central boulevard core through the proposed development that will entail 466 no. semi-mature' or 'extra-heavy standard' size trees. The majority of open space is in grass or meadow. The collective trees will, as they mature, assist in merging the proposed development into the surrounding landscape and local views as well as set about creation of the areas new landscape character.

Further landscape works will include the planting of 2.068km of native hedgerows, the augmentation of 907m of existing hedgerows, wooded structure / belts and amenity planting (4,280m²). The extent of planting will more than compensate for the loss of any vegetation on this site and enhance the overall wooded character, biodiversity and ecological nature of the site.

Planting and augmentation of existing boundary hedgerows will consist of evergreen and deciduous trees with under-story scrub mix. A range of plant species and heights will be selected to provide quick establishment and assist in visual integration. Amenity planting will consist of trees, native woodlands, hedgerows, shrub / groundcover planting, meadow / wildflower and grass seeding works. As the planting matures, it will change the nature of the site and its visual amenity and the height of planting for assessment purposes is as follows:

- Planting at Year 1 : 3 metres;
- Planting at Year 15 : 8 metres; and
- Planting at maturity : 20 metres (i.e. Year 25)

Plants selected are predominantly indigenous and species based on those in the “All-Ireland Pollinator Code 2021-2025” to ensure successful plant establishment that will merge visually and ecologically into this area. Landscape works will be undertaken by an ALCI approved landscape contractor and in accordance with BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces). Any trees or shrubs dying, damaged or removed will be replaced in the following planting session with plants of similar size and species. Trees supply and planting shall correspond to *BS 8545 Trees: from nursery to independence in the landscape - Recommendations*.

While the baseline site character will inevitably change due to this proposal, in terms of woodland and trees the retention of the majority of boundary trees and the new planting provides the opportunity for west Balbriggan to have increased tree cover and a more wooded character in the longer term with positive effects on amenity, environment and ecology.

The following Table summarises the identified likely significant residual effects during the construction phase of the proposed development following the application of mitigation measures.

Table 18.4: Summary of Operational Phase – Post Mitigation

Area	Sensitivity	Summary	Magnitude	Significance	Significant (Yes / No)
Application Site	Medium	New townscape and associated open space.	Major	Slight Positive for Open Space	Major. Yes
Flemington Lane	Medium	Changes to local sense of place but development mostly screened from these areas	Moderate	Slight Adverse	Major. Yes
Clonard Road	Medium	Changes to local sense of place associated with new road and housing.	Moderate	Slight Adverse	Major. Yes
West Balbriggan	Medium	Changes to local sense of place but development partially screened from club premises.	Slight / Moderate	Slight Adverse	Medium. No
Balbriggan	Medium / High	Change of peripheral town edge area to townscape	Slight	Slight Adverse	Low. No.
LCA Coastal Character Type	Medium	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible. No.

18.11 MATERIAL ASSETS – TRANSPORT AND TRANSPORTATION

18.11.1 CONSTRUCTION PHASE

A framework CTMP has been prepared by Transport Insights. This framework CTMP, including in the overall application package, is also presented in Appendix F, Volume III. The framework CTMP addresses likely human health risks and documents construction practices and measures that can be adopted to

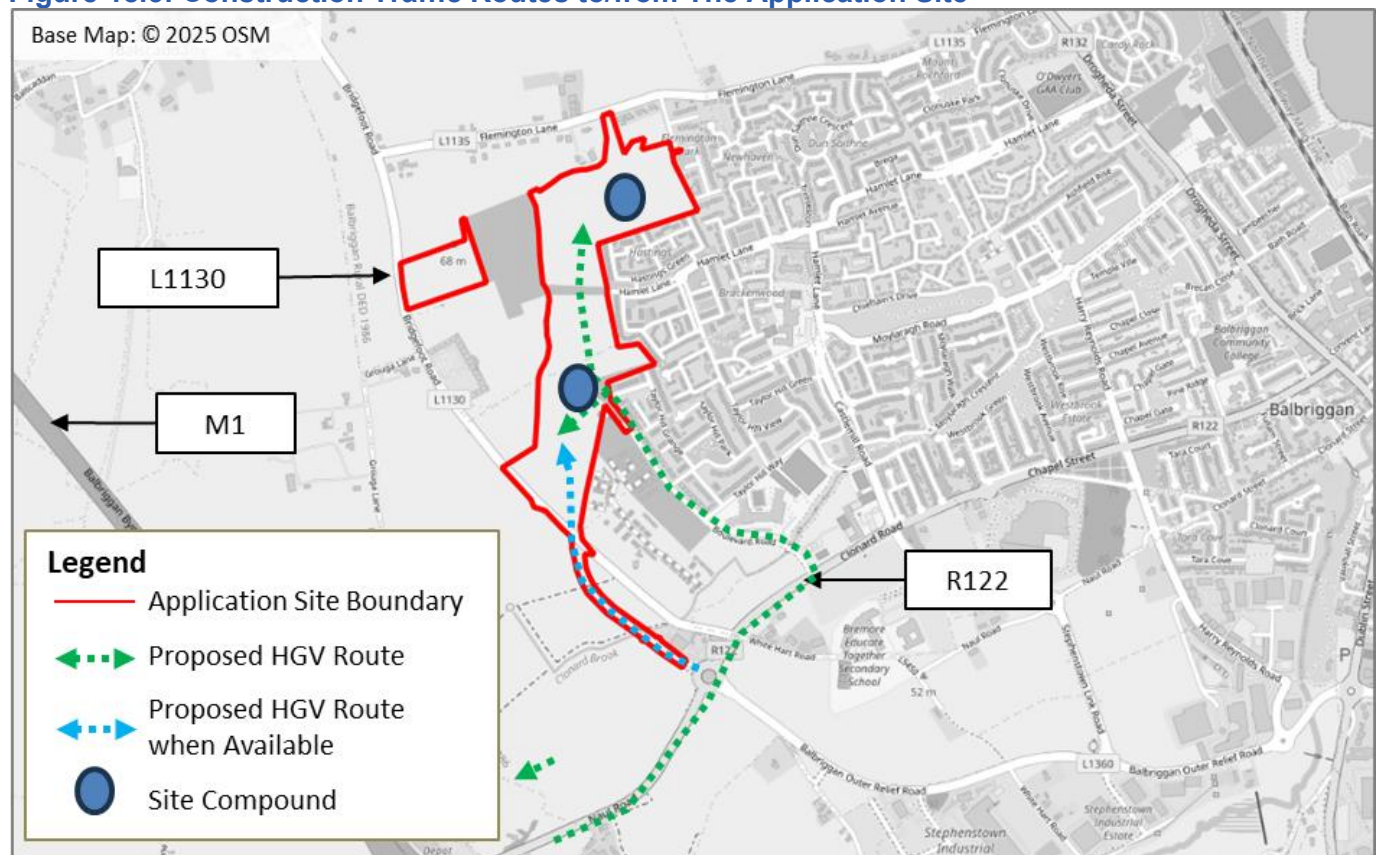
minimise any effects on road users during the proposed development's construction phase. The framework CTMP's overarching objectives are to:

- mitigate likely construction traffic effects on nearby local roads by routing construction traffic along the regional and national road network, where possible;
- construction traffic movements will be scheduled to avoid school pick-up and drop-off times in order to minimise potential conflicts with school-related pedestrian and vehicular activity;
- avoid conflict between construction traffic activities and general traffic/ pedestrians/ cyclists in the general vicinity of the site; and
- set out appropriate construction staff car parking arrangements so as to avoid overspill car parking on the local road network and resulting potential for traffic hazards.

The Framework CTMP will be updated by the Contractor prior to commencement of development and it will include the mitigation measures set out in this EIAR.

In accordance with the CTMP, the set HGV haulage routes are to be strictly adhered to, as illustrated below unless otherwise agreed with FCC.

Figure 18.5: Construction Traffic Routes to/from The Application Site



Furthermore, the following actions will be undertaken in accordance with the framework CTMP:

- All construction staff parking will be accommodated in temporary parking areas within the site, which will have capacity for ca. 100 no. vehicles;
- A Construction Staff Mobility Management Plan (CSMMP) for the site will be developed by the contractor and implemented prior to construction works commencing;
- Just-in-time deliveries will be arranged where feasible;
- Construction materials will, where feasible, be sourced from local suppliers and manufacturers, thus, limit likely effects of construction traffic;

- The site will operate from 07:00hrs to 19:00hrs on weekdays and from 07:00hrs to 14:00hrs on Saturday. No works will be undertaken on Sundays or Bank Holidays without the consent of FCC;
- A signage plan will be developed and implemented, providing advance warning of the construction access junction, and likelihood of slow-moving turning traffic to/ from the site;
- Compliance with the CTMP will form part of written contracts between the principal contractor and nominated sub-contractors;
- Methods of handling materials on site will be in accordance with construction site health and safety requirements;
- Where required, construction vehicles will be inspected prior to exit from the site to ensure that dirt is not spread onto the adjoining road, and systems shall be put in place to facilitate this process, including an on-site cleaning area and/ or rumble grid;
- The principal contractor will comply at all times with FCC requirements, including but not limited to hoarding/ scaffolding licences, skip licences etc; and
- The CTMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CTMP will be in accordance with FCC requirements.

A detailed Construction Environmental Management Plan (CEMP) will be prepared post-planning by the selected construction contractor expanding on the outline plan, and the document will be submitted for approval to FCC prior to the commencement of any construction works. The CEMP will include the mitigation contained in this EIAR including the Framework CTMP.

The CTMP will ensure that suitable temporary traffic works, and road safety measures are put in place during the construction phase. The plan will ensure that any required traffic management measures are put in place to minimise the impact on local road users. Construction related traffic will access/ egress the site via the R122 and Boulevard Road initially and then utilise the new C-Ring Road connection to the R122 roundabout when it becomes operational. In general, the impact of the construction period will be temporary in nature and will cease following completion of the works. No significant effects are likely to occur due to construction phase traffic.

The applicant will appoint a dedicated construction manager and construction traffic manager. The construction traffic manager will be required to coordinate and schedule all deliveries to the site, ensure that the access roads are kept clear of mud and debris, advise haulage contractors on the appropriate routes to and from the site, and to adhere to good traffic management principles. In this way, the likely effects of the construction phase can be appropriately managed. No significant effects are expected.

18.11.2 OPERATIONAL PHASE

Balbriggan provides suitable infrastructure and transport services to enable travel by sustainable modes. In addition, proposed active travel and public transport improvements planned for Balbriggan shall help to enable sustainable mode choices. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car.

To encourage sustainable transport use and help reduce potential traffic impacts, a Framework MMP has been prepared by Transport Insights and is included within the overall application package. The MMP will implement the mitigation measures set out in this EIAR.

11.8.2.1 MMP Objectives and Measures

Considering the site's accessible location, multiple employment and educational destinations within its walking, cycling, and public transport catchment and access to public transport services, the overarching objectives of the MMP are to:

- promote sustainable travel choices (walking, cycling and public transport); and

- support car-free lifestyle among residents and visitors of the development.

To achieve the mode share targets in the MMP, the following actions will be undertaken:

- Appointment of a Residential Travel Plan Co-Ordinator (MMPC);
- Promotion of the public transport TaxSaver scheme and Cycle to Work scheme;
- Promote a sustainable alternative to private car ownership through provision of a number of car share bays, located adjacent proposed apartment blocks;
- Provision of secure cycle parking for standard and non standard type bicycles across the development to serve future residents, visitors and users of the commercial, community and creche amenities;
- Promotion of walking as active travel in residents Sustainable Transport Information Pack; and
- Incentivising Active Commuters.

The Framework document sets out a clear set of objectives and identifies measures to help achieve the stated objectives, as well as appropriate monitoring and marketing techniques. Following occupation of the site and appointment of an MMPC, it is recommended that the Action Plan included in the MMP be further developed. The Action Plan will remain a *'living'* document thereafter and should be updated periodically.

18.11.3 MONITORING

18.11.3.1 Construction Phase

During the construction stage the following monitoring exercises will be carried out. The specific compliance exercises to be undertaken in regard to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions, and
- Timings of construction activities.

The CTMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CTMP will be in accordance with FCC requirements.

18.11.3.2 Operational Phase

It is important to monitor and update the MMP to ensure the actions are being implemented and that action is sustained over time. It also provides an opportunity for the effectiveness of actions to be assessed, and if required, new actions identified. The following steps are recommended to monitor progress:

- Informed by a residents and visitors travel survey, the MMP should be updated within 3 months of occupation of the full site; and the Action Plan tailored to meet the specific requirements of its residents and visitors.
- A resident and visitor travel survey should be carried out biannually thereafter, forming the baseline from which the MMP's future performance is measured and additional/ amended interventions identified.
- A review of the actions carried out or due should be carried out by the MMPC every six months. This should take the form of a memo to the scheme's management company, documenting actions implemented, residents' feedback etc.

18.12 MATERIAL ASSETS – WASTE

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concepts of the '*waste hierarchy*' and '*circular economy*' are employed when considering all mitigation measures.

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. A circular economy is a model of resource production and consumption in any economy that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible.

18.12.1 CONSTRUCTION PHASE

The following mitigation measures will be implemented during the construction phase of the proposed development:

Waste Management (WM)_1:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Volume III of the EIAR Appendix E (Appendix 12.1). The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction stages of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP Volume III of the EIAR Appendix E (Appendix 12.1) in agreement with FCC and in compliance with any planning conditions, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed demolition, excavation and construction stages.

Waste Management (WM)_2:

- A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Development Engineers have estimated that the majority excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

Waste Management (WM)_3:

- Building materials will be chosen to '*design out waste*'.

Waste Management (WM)_4:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
 - Concrete rubble (including ceramics, tiles and bricks);
 - Soil and stones;
 - Concrete, bricks, tiles and ceramics;
 - Wood, glass and plastics;
 - Metals;
 - Gypsum-based construction material;
 - Paper and cardboard;
 - Mixed construction and demolition (C&D) waste;
 - Chemicals (solvents, paints, adhesives, detergents etc.).
 - WM_5:
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible (alternatively, the waste will be sorted for recycling, recovery or disposal).

Waste Management (WM)_6:

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.

Waste Management (WM)_7:

- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).

Waste Management (WM)_8:

- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.

Waste Management (WM)_9:

- All construction staff will be provided with training regarding the waste management procedures.

Waste Management (WM)_10:

- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal.

Waste Management (WM)_11:

- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.

Waste Management (WM)_12:

- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Waste Management (WM)_13:

- Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-

product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction stage of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWCPE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

18.12.2 OPERATIONAL PHASE

The following mitigation measures will be implemented during the operational phase of the proposed development:

Waste Management (WM)_14:

- All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

Waste Management (WM)_15:

- As previously stated, a project specific OWMP has been prepared and is included as Volume III of the EIAR Appendix E (Appendix 12.2). The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE , Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the FCC waste bye-laws.
- The residents, tenants and facilities management of the site during the operational stage will be responsible for ensuring the ongoing implementation of this OWMP and the abiding of FCC waste bye-laws, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.

Waste Management (WM)_16:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
 - Organic waste;
 - Dry Mixed Recyclables;
 - Mixed Non-Recyclable Waste;
 - Glass;
 - Deposit return scheme
 - Waste electrical and electronic equipment (WEEE);
 - Batteries (non-hazardous and hazardous);
 - Cooking oil;
 - Light bulbs;
 - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
 - Furniture (and from time to time other bulky waste); and
 - Abandoned bicycles.

Waste Management (WM)_17:

- The residents, tenants and facilities management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.

Waste Management (WM)_18:

- The residents, tenants and facilities management will ensure that all waste collected from the site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and

Waste Management (WM)_19:

- The residents, tenants and facilities management will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, *The NWMPCE* and the FCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.12.3 MONITORING

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation. Monitoring proposals for the construction phase are summarised in Table 12.4.

The management of waste during the operational phase will be monitored by the Operator / Facilities Management to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s). Monitoring proposals for the operational phase are summarised in Table 12.4.

Table 18.5: Monitoring Proposals for the Construction Stage

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	An appointed Resource Manager will monitor all on-site waste segregation and classification

Table 18.6: Monitoring Proposals for the Operational Stage

Likely Significant Effect	Monitoring Proposals
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make available to FCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the operator / facilities management company

18.13 MATERIAL ASSETS – UTILITIES

All possible measures will be taken to avoid unplanned disruptions to any services within the site during construction of the proposed development. It should be noted that a number of mitigation measures are proposed in other chapters of this EIAR, which are collated into Chapter 18 of this EIAR. The mitigation measures contained in Chapter 18 of the EIAR will be incorporated into the Contractor's CEMP.

It should be noted that a number of mitigation measures are proposed in other chapters of this EIAR. Mitigation measures proposed in respect to Material Assets are as follows:

18.13.1 CONSTRUCTION STAGE

The following mitigation measures are proposed for the construction phase of the development with respect to Material Assets:

- The proposed development will comply with the provisions of the Resource Waste Management Plan prepared by AWN included in Appendix E of Volume III of the EIAR, with respect to construction waste.
- The proposed development will comply with the provisions of the Construction Environmental Management Plan included in Appendix E of Volume III of the EIAR.
- Water metering will be provided during the construction phase to record consumption.
- All new services will be constructed and provided in strict accordance with the relevant codes of practice.

18.13.2 OPERATION STAGE

- All new foul and surface water drainage pipes to be pressure tested and CCTV to identify any possible defects
- Water conservation measures to be implemented, which include water metering, recycling vehicle wash waters, rainwater capture, low flush, waterless urinals, spray taps, efficiency attachments.
- Ensure that all Hydrobrakes are designed to limit the flow of water from the development to the greenfield run off.
- All watermain pipes to be pressure tested in accordance with Uisce Eireann details.

In addition, construction stage mitigation measures are also provided in Table 13.3 below.

Table 18.7: Operational Stage Mitigation Measures

Character of potential impact	Mitigation measure
Construction Phase	
Damage to existing utilities	Contractor will prepare Method Statement detailing the proposals for works in the vicinity of existing utilities (method statement to be agreed with Project Supervisor Design Process (PSDP))
Contamination of surface water runoff due to construction activities	Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
Improper discharge of foul drainage from contractor's compound	Foul drainage discharge from the construction compound will be transported off site to a licensed facility until a connection to the public foul drainage network has been established.
Cross contamination of potable water supply to construction compound	The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.

Damage to existing underground and overground infrastructure and possible contamination of the existing systems with construction related materials.	A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Please refer to PMCG Construction & Environmental Management Plan.
Potential loss of connection to the Telecommunications infrastructure while carrying out works to provide service connections	Connections to the existing telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.
Operational Phase	
Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff	Please refer to Chapter 6.0 – Water Hydrogeology and Hydrology for mitigation measures associated with the surface water treatment.
Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).	Please refer to Chapter 6.0 – Water Hydrogeology and Hydrology for mitigation measures associated with the surface water treatment.
Increased discharge to foul drainage network	Water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.
Increased potable water consumption	Water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.
Contamination of surface water runoff from foul sewer leaks.	All new foul drainage lines will be pressure tested and will be subject to a CCTV survey in order to identify any possible defects prior to being made operational.

Diversion proposals will comply fully with UÉ Codes of Practice and be submitted to the Diversions Section for approval.

18.13.3 MONITORING

Please refer to Chapter 6.0 – Water and Chapter 4.0 Biodiversity for the proposed monitoring in relation to the surface water during the construction phase. There is no specific monitoring proposed in relation to the remaining material assets infrastructure during the construction phase.

Once operational water usage will be monitored by a bulk water meter and compared to anticipated usage. This will allow Uisce Eireann to monitor any potential leaks.

Proposed monitoring during the operational phase in relation to the water infrastructure are as follows:

- All drainage works will be approved by Fingal County Council, Sanitary Services Division, and will be carried out in accordance with the GDR COP (Greater Dublin Regional Code of Practice for Drainage Works).
- The surface water and foul drainage systems will be monitored by way of observation of any flooding events if such occur and the establishment of a proper maintenance programme for all sewers / Suds features etc.
- Regular cleaning of pipe networks within the development taken in charge will ensure no blockage will obstruct any flow from surface and foul networks.
- On-going water usage within the proposed development will be monitored by bulk water meters. Water usage will be monitored by the relevant authority to avoid waste and leaks etc.

- All drainage works will be approved by Fingal Dublin County Council and will be carried out in accordance with the GDR COP (Greater Dublin Regional Code of Practice for Drainage Works).
- All foul and surface water sewers will be CCTV surveyed prior to being 'taken in charge' by Fingal County Council.

Mismanagement or failure of the potable water supply drainage could lead to contamination during the construction phase. Working in trenches and in close proximity with live services could pose a risk to human health if mitigation measures are not put in place. The exposure of bedrock could, cause the risk of Radon exposure to human health during the construction phase. The use of Radon barriers in construction will mitigate this risk.

Quality of Effect: Negative.

Significance of Effect: Slight.

18.14 CULTURAL HERITAGE

18.14.1 CONSTRUCTION PHASE

18.14.1.1 Archaeology

It is acknowledged that preservation in-situ of archaeological remains is the preferred method in which to conserve the archaeological resource. As detailed above, the design of the proposed development will allow for the preservation of the central concentration of features associated with field system (DU001-023). Eastern associated features will be subject to preservation by record prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoH LGH.

With regards to the greenspace containing the field system, the core area will be fenced off from construction activity and all footpaths across the area will be laid as non-dig. In addition, no deep rooting trees will be planted in the greenspace and services will avoid the area.

The site of the holy well (DU001-004) will be cordoned off during construction, due to its location immediate to the proposed development area. This will ensure that the site is not impacted by passing construction traffic.

Whilst preservation in-situ is the preferred manner in which to conserve the archaeological resource, it will not be possible to preserve DU001-022001-2 (probable prehistoric activity), DU001-026 (miscellaneous excavation) in-situ. These features will be subject to preservation by record prior to the commencement of construction. This will be carried out under licence to the National Monuments Service of the DoH LGH.

Similarly, it will not be possible to preserve recorded enclosure site DU001-027. This is due to the required density associated with the development and the fact a large greenspace has already been established for the recorded field system. As such, the enclosure site will be subject to preservation by record. This will be carried out under licence to the National Monuments Service of the DoH LGH.

Enclosure (DU001-033) will be preserved in-situ, and the extent of the site will be fenced off during construction to avoid inadvertent impacts from construction. No trees or deep rooting plants will be planted in the area containing the monument and the passing footpath will be laid by no dig methods.

All topsoil stripping associated with the proposed development be monitored by a suitably qualified archaeologist. This will be carried out under licence from the National Monuments Service of the DoH LGH. If any further features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoH LGH.

Prior to the commencement of construction, a programme of test trenching will be carried out within the southern portion of the proposed development area. This will be carried out under licence from the National Monuments Service of the DoHLGH. If any further features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

18.14.1.2 Architectural

As there are no predicted impacts on the architectural resource, no mitigation is deemed necessary.

18.14.1.3 Cultural Heritage

All excavations for interventions through the Flemingtoun-Clonard or Folkstown Great townland boundary will be subject to archaeological monitoring, with a full record of the removed sections made. This will be carried out under licence from the National Monuments Service of the DoHLGH.

18.14.2 OPERATIONAL PHASE

A full Conservation Management Plan will be compiled in order to ensure the appropriate management and ongoing conservation during the operation phase of DU001-033 Enclosure and DU001-023 Field System. This will include a strategy for heritage interpretation for the sites along with details regarding proscribed activity within the areas. The contents of the plan will be developed in consultation with Fingal County Council and the National Monuments Service of the DoHLGH.

18.14.3 MONITORING

The mitigation measures detailed above would also function as a monitoring system to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

18.15 RISK MANAGEMENT

The Construction Environmental Management Plan (contained in Appendix D Volume III of the EIAR) and the Health and Safety Plan (which will be developed and included in the final Contractor's CEMP) will limit the risk of accidents during construction. Fire safety will be dealt with under the Fire Safety Code at design and construction stage. The estate management company will have responsibility for fire safety during operations. The CEMP along with the mitigation measures contained in this EIAR will be implemented as part of the construction of the project. The proposed development will involve the ground works to facilitate the proposed development. Site investigations have been carried out and have not identified any hazardous material. Further site investigation and WAC (Waste Acceptance Criteria) testing will be carried out prior to construction to inform the detailed design. In the event that any hazardous material is identified the appropriate measures will be taken in accordance with the requirements of the EPA. The excavation and movement of soil from the site will be undertaken by a registered specialist contractor and removed to a licenced facility. The following are outlined:

- Hazardous materials used during construction will be appropriately stored so as not to give rise to a risk of pollution.
- In the event of storms or snow, construction activity can be halted and the site secured. The construction activity will involve a number of potential risks, as set out below. The risks identified include traffic management, and fire strategy.
- During the construction stage, the risk of accidents associated with the proposed development are not predicted to cause unusual, significant or adverse effects to the existing public road network.

The vast majority of the works are away from the public road in a controlled environment. The objective of which is to minimise the short-term disruption to local residents and reduce the potential for accidents.

- Furthermore, is expected that the risk of accidents would be low during the construction of the proposed development considering the standard construction practices which are to be used.
- With reference to natural disasters (e.g. flooding), the proposed development has undergone a Site Specific Flood Risk Assessment, prepared by Paul McGrail Consulting Engineers. The site is located in Flood Zone C where development and is not at risk of fluvial, pluvial or groundwater flooding.
- A Health and Safety Plan will be prepared (required by the Safety, Health and Welfare at Work (Construction) Regulations 2013) to address health and safety issues from the design stages through to the completion of the construction and maintenance phases. The Health and Safety Plan will comply with the requirements of the Regulations and will be reviewed as the development progresses.
- Safety on site will be of paramount importance. Only contractors with the highest safety standards will be selected. During the selection of the relevant contractor and the respective subcontractors their safety records will be investigated.
- Prior to working on site, each individual will receive a full safety briefing and will be provided with all of the safety equipment relevant to the tasks the individual will be required to perform during employment on site.
- Safety briefings will be held regularly and prior to any onerous or special task. 'Toolbox talks' will be held to ensure all workers are fully aware of the tasks to be undertaken and the parameters required to ensure the task will be successfully and safely completed.
- All visitors will be required to wear appropriate personal protective equipment prior to going on to the site and will undergo a safety briefing by a member of the site safety team.
- Regular site safety audits will be carried out throughout the construction programme to ensure that the rules and regulations established for the site are complied with at all times.

Table 18.8: Strategy for tackling potential risks.

1. BASIC RISK INFORMATION			2. RISK ASSESSMENT INFORMATION		3. RISK RESPONSE INFORMATION
Risk Number	Risk Description / Risk Event Statement	Responsible	Impact H / M / L	Probability H / M / L	Actions
Provide a unique identifier for risk	A risk event statement states (i) what might happen in the future and (ii) its possible impact on the project.	Name or title of team member responsible for risk	Enter H (High); M (Medium); or L (Low) according to impact definitions	Enter H (High), M (Medium) or L (Low) according to probability definitions	List, by date, all actions taken to respond to the risk. This does not include assessing the risk

1. BASIC RISK INFORMATION			2. RISK ASSESSMENT INFORMATION		3. RISK RESPONSE INFORMATION
1	Work which puts persons at risk of:-burial under earth falls. Risk of burial under earthfalls in trenches.	Project Supervisor Construction Stage (PSCS)	H	M	Contractor to address requirement for trench support. Excavations are to be carried out at safe slope. Refer to site investigation for same and temporary works engineer to design.
2	Scaffolding Risk of falling from scaffolding, ladders or unprotected edges/open voids during the construction phase.	PSCS	H	M	Working at height required throughout the project. Installation of scaffolding for all working at height activities to be subject to a full temporary works design submission. In order to fully Co-Ordinate any temporary works submission the Project Supervisor for the Design Process must receive the following items before reviewing any submission; A full design submission, Calculations for the design, Design Risk Assessment, Copy of designer's PI insurances, Designers CV. This submission can then be reviewed by the Permanent Works Engineer to ensure the design will not impact on the permanent structure.
3	Fire Strategy Risk of fire damage to houses or to partially complete new apartment blocks from construction activities.	PSCS/ PSDP / Fire SC.	H	M	Fire strategy must be put in place in advance of start on site which must take into consideration the requirement for hot works and the provision of Hot Works Permit systems to manage Hot works when needed. A fire marshal will be required - full co-operation from site supervisors and contractors will be required.

1. BASIC RISK INFORMATION			2. RISK ASSESSMENT INFORMATION		3. RISK RESPONSE INFORMATION
4	Lifting Operations Work involving the assembly or dismantling of heavy pre-fabricated components. Risk of injury during the assembly of precast columns, stairs, façade panels, etc.	PSCS/PSDP	H	M	Lifting operations using cranes will be a requirement during the project. The PSDP must identify this as a risk factor ensuring the ground conditions are tested and appropriate to point loading from mobile cranes. The PSCS must ensure there is a fully risk assessed lift plan to manage all lifting operations on site.
5	Existing Utilities Work near overhead electric cables, risk of Electrocutation	PSCS/PSDP	H	M	The PSDP must highlight the existence of live overhead ESB cables on site. The sequence of work to be planned to avoid working in close proximity to the lines. The PSCS to arrange for the relocation of the lines prior to working around them. The PSCS must follow the ESB code of practice and provide a risk assessed RAMS document to manage this hazard.
6.	Construction Traffic Working adjacent to live construction and normal traffic.	PSCS/PSDP	H	M	Contractor to prepare and implement a Construction Traffic Management Plan to be agreed with the design team to ensure public safety. The contractor is to supervise vehicle movements during construction and enforce the traffic management plan.

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