

Volume II – Environmental Impact Assessment Report



LARGE SCALE RESIDENTIAL DEVELOPMENT PLANNING APPLICATION

RESIDENTIAL & COMMERCIAL DEVELOPMENT

LANDS LOCATED OFF FLEMINGTON LANE, BALBRIGGAN, CO. DUBLIN

JULY 2023

SUBMITTED ON BEHALF OF:
Dean Swift Property Holdings
Unlimited Company,
5 Clarinda Park North,
Dun Laoghaire,
Co. Dublin

85 Merrion Square, Dublin 2, D02 FX60
+353 (0)1 539 0710 info@hpdc.ie www.hpdc.ie

HUGHES
PLANNING
& DEVELOPMENT CONSULTANTS

Table of Contents

1.0	INTRODUCTION.....	6
1.1	Background.....	6
1.2	Purpose of this Report.....	6
1.3	EIA Legislation.....	7
1.4	Definition of EIA and EIAR.....	7
1.5	The Need for an Environmental Impact Assessment Report (Screening).....	8
1.6	The Scope of the Environmental Impact Assessment Report (Scoping).....	8
1.7	Competency and EIAR Project Team.....	9
1.8	Structure of Environmental Impact Assessment Report.....	12
1.9	Cumulative Projects.....	14
1.10	Consultation.....	15
1.11	Statement of Difficulties Encountered.....	16
1.12	References.....	16
2.0	PROJECT DESCRIPTION AND ALTERNATIVES EXAMINED.....	17
2.1	Introduction.....	17
2.2	Site Location and Context.....	17
2.3	Nature and Extent of Proposed Development.....	20
2.4	Alternatives Examined.....	67
2.5	“Do Nothing” Alternative.....	77
2.6	Conclusion.....	77
3.0	PLANNING AND DEVELOPMENT CONTEXT.....	78
3.1	Introduction.....	78
3.2	Statutory Planning Context.....	78
3.3	National and Regional Planning Policy Context.....	79
3.4	Local Policy Context.....	106
3.5	Planning History of the Site.....	123
3.6	Planning History of the Adjoining Land.....	127
3.7	Conclusion.....	132
4.0	POPULATION AND HEALTH.....	133
4.1	Introduction.....	133
4.2	Methodology.....	134
4.3	Population.....	134
4.4	Employment and Economic Activity.....	137
4.5	Land Use and Settlement Patterns.....	138
4.6	Housing.....	140
4.7	Community Infrastructure and Social Facilities.....	141
4.8	Health and Safety.....	143
4.9	Risk of Major Accidents and Disasters.....	145
4.10	Cumulative Impacts.....	146
4.11	Mitigation Measures.....	146
4.12	Residual Impacts.....	147
4.13	Monitoring.....	147
4.14	References.....	147
5.0	BIODIVERSITY.....	148
5.1	Introduction.....	148
5.2	Methodology.....	151
5.3	Existing Receiving Environment.....	153
5.4	Potential Impact of the Proposed Development.....	172
5.5	Mitigation Measures (Ameliorative, Remedial or Reductive Measures).....	181
5.6	Residual Impact of the Proposed Development.....	182
5.7	Monitoring.....	182
5.8	Difficulties Encountered.....	182
5.9	References.....	182

6.0	LAND & SOILS	184
6.1	Introduction.....	184
6.2	Research Methodology	185
6.3	Receiving Environment	186
6.4	Land and Soil Baseline Environment	188
6.5	Characteristics of the Proposed Development.....	191
6.6	Potential Impact of the Proposed Development.....	194
6.7	Remedial and Reductive Measures	200
6.8	Predicted Impact of Proposed Development	202
6.9	Monitoring.....	203
7.0	HYDROLOGY & HYDROGEOLOGY	204
7.1	Introduction.....	204
7.2	Research Methodology	205
7.3	Receiving Environment	206
7.4	Characteristics of the Proposed Development.....	223
7.5	Potential Impacts of the Proposed Development.....	227
7.6	Remedial and Reductive Measures	230
7.7	Predicted Impact of Proposed Development	231
7.8	Monitoring.....	232
7.9	Interactions.....	233
7.10	Difficulties Encountered in Compilation	233
8.0	NOISE AND VIBRATION	234
8.1	Introduction.....	234
8.2	Methodology.....	234
8.3	Existing Receiving Environment.....	239
8.4	Characteristics of the Proposed Development.....	243
8.5	Potential Impact of the Proposed Development.....	243
8.6	Remedial and Mitigation Measures.....	247
8.7	Residual Impact of the Proposed Development.....	249
8.8	References	249
9.0	AIR QUALITY	251
9.1	Introduction.....	251
9.2	Methodology.....	251
9.3	Receiving Environment	257
9.4	Characteristics Of The Proposed Development.....	261
9.5	Potential Impact Of The Proposed Development.....	261
9.6	Remedial Or Reductive Measures	267
9.7	Predicted Impact Of The Proposed Development	271
9.8	Monitoring.....	271
9.9	References	271
10.0	CLIMATE	273
10.1	Introduction.....	273
10.2	Methodology.....	273
10.3	Receiving Environment	280
10.4	Characteristics Of The Proposed Development.....	282
10.5	Potential Impact Of The Proposed Development.....	282
10.6	Remedial Or Reductive Measures	285
10.7	Predicted Impact Of The Proposed Development	285
10.8	Monitoring.....	285
10.9	REFERENCES.....	286
11.0	WIND AND MICROCLIMATE.....	288
11.1	Introduction.....	288
11.2	Research Methodology	288
11.3	Receiving Environment	288
11.4	Characteristics of the Proposed Development.....	290

11.5	Potential Impact of the Proposed Development.....	291
11.6	Do-Nothing Approach.....	293
11.7	Remedial or Reduction Measures: Mitigation	293
11.8	Predicted Impact of the Proposal.....	293
11.9	Monitoring.....	293
12.0	MATERIAL ASSETS – TRANSPORT.....	294
12.1	Introduction.....	294
12.2	Research Methodology	294
12.3	Receiving Environment (Baseline Situation).....	294
12.4	Characteristics of the Proposed Development.....	307
12.5	Potential Impact of The Proposed Development	316
12.6	Mitigation and Remedial Measures.....	325
12.7	Predicted Impact of the Proposed Development	327
12.8	Assessment Summary and Residual Environmental Effects.....	343
13.0	MATERIAL ASSETS –UTILITIES	345
13.1	Introduction.....	345
13.2	Research Methodology	346
13.3	Receiving Environment	347
13.4	Characteristics of the Proposed Development.....	358
13.5	Potential Impact of The Proposed Development	359
13.6	Mitigation and Remedial Measures.....	364
13.7	Predicted Impact of the Proposed Development	366
13.8	Residual Impacts.....	367
13.9	Monitoring.....	367
13.10	Reinstatement	368
14.0	ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE.....	369
14.1	Introduction.....	369
14.2	Research Methodology	370
14.3	Receiving Environment	372
14.4	Characteristics of the Proposed Development.....	411
14.5	Potential Impact of the Proposed Development.....	413
14.6	Do-Nothing Approach.....	417
14.7	Remedial or Reduction Measures: Mitigation	417
14.8	Predicted Impact of the Proposal.....	419
14.9	Monitoring.....	419
14.10	Reinstatement	419
14.11	References	420
15.0	LANDSCAPE AND VISUAL AMENITY	422
15.1	Introduction.....	422
15.2	Research Methodology	422
15.3	Receiving Environment - Landscape Character/ Context in the Existing Environment	430
15.4	Characteristics of the Proposed Development.....	445
15.5	Potential Impact of the Proposed Development.....	448
15.6	Do-Nothing Approach.....	466
15.7	Remedial or Reduction Measures: Mitigation	466
15.8	Cumulative Effects	468
15.9	Residual Impact of the Proposed Development.....	468
15.10	Interrelationships	468
15.11	Worst Case Impacts.....	469
15.12	Monitoring.....	469
15.13	Difficulties Encountered	469
16.0	INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS	470
16.1	Introduction.....	470
16.2	Impact Definitions.....	470
16.3	Summary of Principal Interactions	471

16.4 Cumulative Impacts..... 481

16.5 ‘Do Nothing’ Scenario 481

16.6 Mitigation and Monitoring Measures 481

17.0 MITIGATION AND MONITORING MEASURES 482

17.1 Introduction..... 482

17.2 Mitigation and Monitoring Measures 482

1.0 INTRODUCTION

1.1 Background

The Applicant, Dean Swift Property Holdings Unlimited Limited has acquired the subject lands (Lands located off Flemington Lane, Balbriggan, Co. Dublin) with the intention of securing planning permission for the optimum land use on these underutilised lands on Flemington Lane. The lands are adjacent to an area that has experienced extensive residential development in recent years.

A mixed-use development, comprising 564 no. residential units, 9 no. commercial units, 6 no. communal units, and 3 childcare facilities, has been identified as the preferred development option for the subject site, having regard to the employment opportunities existing in the surrounding area, and the sites proximity to public transport services, and the current demand for quality housing in the North Dublin area.

The design of the subject proposal has evolved during the Large Scale Residential Development (LRD) planning process in response to the feedback received at informal and formal S.247 and LRD pre-planning consultation meetings with Fingal County Council; the policies and objectives of the Fingal Development Plan 2023-2029; and the input of the Environmental Impact Assessment team.

1.2 Purpose of this Report

Hughes Planning and Development Consultants have been commissioned by Dean Swift Property Holdings Unlimited Company (referred to as the Applicants throughout), to prepare an Environmental Impact Assessment Report for a Large Scale Residential Development (LRD) application for the proposed development of a mixed use residential and commercial scheme on lands located at the Lands of Flemington Lane, Balbriggan, Co. Dublin.

A full description of the proposed development lands together with a description of the proposed development is provided in Chapter 2.0 of this document. In summary, the proposed development comprises the construction of 564 no. dwelling units, consisting of 378 no. houses; (127 no. two bedroom houses; 237 no. three- bedroom houses and 14 no. four-bedroom houses), 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 102 no. apartments (35 no. one bedroom apartments and 67 no. two bedroom apartments), 3 no. childcare facilities, 9 no. commercial units and 6 no. communal units, 927 no. car parking spaces (including set down spaces) 2,014 no. bicycle spaces, outdoor amenity space, Class 1 Open Space and ancillary site development works necessary to facilitate the development.

The purpose of an Environmental Impact Assessment Report is to assess the likely and significant impact on the environment of the proposed development in parallel with the project design process. The potential impacts will be dependent on the nature, size and location of the proposed development.

This Environmental Impact Assessment Report has been prepared in accordance with the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (published in August 2018) and Guidelines on the Information to be contained in Environmental Impact Assessment Reports, published by the EPA in May 2022, as well as previously issued Irish and European EIA Guidelines and Guidance Documents.

We would also note that in preparing the subject Large-scale Residential Development application and EIAR, the applicant and design/EIAR team have undertaken extensive pre-planning consultation with Fingal County Council. The feedback received from Fingal County Council significantly influenced the design and layout of the proposed development, in addition to informing this EIAR. The feedback received during these consultations and the subsequent amendments made to the scheme in response are detailed in Section 2.4.4 of this EIAR as well as in Section 3.0 of the Statement of Consistency & Planning Report, prepared by Hughes Planning and Development Consultants, which accompanies this application. The evolution the proposed development undertaken during this consultation process has resulted in a high quality, medium density, low carbon, modern urban residential neighbourhood specifically connected to high-capacity high quality public transport infrastructure.

1.3 EIA Legislation

Environmental Impact Assessment requirements are governed by Directive 2014/52/EU, which amends the previous EIA Directive (Directive 2011/92/EU). Article 2 of Directive 2014/52/EU provides that Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with the Directive by 16 May 2017. The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 transposed the provisions of Directive 2014/52/EU into Irish law by amending the Planning and Development Act 2000, the Planning and Development (Housing) and Residential Tenancies Act 2016, the Planning and Development (Amendment) Act 2018 and the Planning and Development Regulations 2001 (as amended).

The objective of Directive 2011/92/EU, as amended by Directive 2014/52/EU (the “**EIA Directive**”), is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for environmental impact assessment, prior to development consent being given, of public and private developments that are likely to have significant effects on the environment.

1.4 Definition of EIA and EIAR

The EIA Directive defines ‘*environmental impact assessment*’ (EIA) as:

‘a process consisting of:

- a) the preparation of an Environmental Impact Assessment Report (EIAR) by the developer;*
- b) the carrying out of consultations;*
- c) the examination by the competent authority of the EIAR, any supplementary information provided, where necessary, by the developer and relevant information received through consultations with the public, prescribed bodies and any affected Member States*
- d) the reasoned conclusion of the competent authority on the significant effects of the project on the environment, and*
- e) the integration of the competent authority’s reasoned conclusion into any development consent decision.’*

The definition of EIA provides for a clear distinction between the process of environmental impact assessment to be carried out by the competent authority (in this instance An Bord Pleanála) and the preparation by the developer of an Environmental Impact Assessment Report (EIAR).

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, defines an EIAR as:

‘A report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive.’

Pursuant to Article 5(1)(a) to (f) of the Directive, an EIAR is required to provide the following information:

- a) A description of the project comprising information on the site, design, size and any 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 of the Directive/Schedule 6 to the 2001 Regulations, as amended, relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.*

As is required by Annex IV of the EIA Directive, this EIAR addresses matters including proposed demolition works, risks to human health, major accidents/disasters, biodiversity, climate change and cumulative effects with other existing and/or approved projects.

The EPA Guidelines state that the main purpose of an EIAR *'is to identify, describe and present an assessment of the likely significant impacts of a project on the environment. This informs the CA's assessment process, its decision on whether to grant consent for a project and, if granting consent, what conditions to attach.'*

1.5 The Need for an Environmental Impact Assessment Report (Screening)

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. Schedule 5 (Part 1) of the Planning & Development Regulations 2001 (as amended) transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. The Directive prescribes mandatory thresholds in respect to Annex I projects.

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.

The subject development corresponds with the classes of development listed in paragraphs 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the Planning & Development Regulations 2001 (as amended):

Paragraph 10(b)(i): *"Construction of more than 500 dwelling units."*

Paragraph 10(b)(iv): *"Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere."*

Given the number of units proposed at 564 no. units on a site area of 22.62 ha, the subject proposal would constitute an "infrastructure project" with respect to Class 10 Annex II and accordingly an EIA is required under Class 10(b)(i).

1.6 The Scope of the Environmental Impact Assessment Report (Scoping)

'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 guidance (Guidance on EIA Scoping, EC, 2001) as:

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

A scoping exercise to identify the issues that are likely to be most important during the EIA process was carried out by the applicant, design team and EIAR consultants and informed the format of this EIAR.

The scoping of the EIAR has also taken into consideration the proposed development with specific reference to the surrounding environment, adjoining properties and any third-party concerns, the existing planning history pertaining to the subject lands and the surrounding area, and ensuring amenity impacts are reduced, removed or where applicable, mitigated to an appropriate level. The feedback received at S247 and LRD consultation meetings with Fingal County Council has also informed the scope of the EIAR. The EIAR prepared for the scheme has endeavoured to be as thorough as possible.

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

- Project Description and Alternatives Examined;
- Planning and Development Context;
- Population and Health;
- Biodiversity;
- Land & Soils;
- Water, Hydrology & Hydrogeology;
- Noise and Vibration;
- Air Quality;
- Climate;
- Wind and Microclimate;
- Material Assets (Transport);
- Material Assets (Utilities);
- Archaeological, Architectural and Cultural Heritage;
- Landscape and Visual Amenity;
- Interaction between Environmental Factors;
- Principle Mitigation and Monitoring Measures;
- Non-Technical Summary; and
- Appendices.

In addition to the above a series of standalone reports have been prepared to accompany the planning application and which have helped inform the above chapters of the EIAR where relevant.

1.7 Competency and EIAR Project Team

It is a requirement that the EIAR must be prepared by competent experts. The EIA Directive 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'.

For the preparation of this EIAR, the Applicant engaged Hughes Planning and Development Consultants to direct and coordinate the preparation of the EIAR and a team of qualified specialists were engaged to prepare individual chapters.

In order to outline compliance with this requirement of the amended directive and in line with emerging best practice the EIAR states the names of the environmental consultants who have prepared each element of the EIAR and lists their qualifications and relevant experience; demonstrating that the EIAR has been prepared by competent experts.

The consultant firms and their inputs are set out in Table 1.1 below. Details of competency, qualifications and experience of the lead author of each chapter and contributors to the applicable are outlined in the table below.

Organisation	Lead Consultant	Topics/Inputs
<p>Hughes Planning and Development Consultants 85 Merrion Square Dublin 2, D02 FX60 T: 01 539 0711 E: info@hpd.ie,</p>	<p>Mrs Muireann Coughlan - BA in Geography and Sociology and Masters in Planning and Sustainable Development. Member of RTPI and IPI.</p>	<ul style="list-style-type: none"> • Introduction and Methodology; • Project Description and Alternatives Examined;

<p>anne.mcelligott@hpdc.ie, or christopher.browne@hpdc.ie</p>	<p>Ms. Danielle O' Leary – Bachelor of Science Degree in Earth and Environmental Sciences and Masters in Planning and Sustainable Development. Member of the Irish Planning Institute (IPI).</p>	<ul style="list-style-type: none"> • Planning and Development Context • Population and Health • Interactions of the Foregoing; • Principle Mitigation and Monitoring Measures; and • Non-Technical Summary.
<p>Altemar Ltd Templecarrig Upper, Greystones, Co. Wicklow, Ireland T: 01 2010713 E: bryan@altemar.ie</p>	<p>Mr. Bryan Deegan – Director, Altemar Environmental Consultants – MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and NCEA National Certificate in Science (Aquaculture)</p>	<ul style="list-style-type: none"> • Biodiversity
<p>AWN Consulting Limited The Tecpro Building Clonsaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: marcelo.allende@awnconsulting.com</p>	<p>Mr. Alistair Maclaurin – BSc in Creative Music and Sound Technology and a Diploma in Acoustics and Noise Control. Member of the Institute of Acoustics (MIOA).</p> <p>Mr. Mike Simms – BE and MEngSc in Mechanical Engineering. Member of the Institute of Acoustics and the Institution of Engineering and Technology.</p>	<ul style="list-style-type: none"> • Noise and Vibration
<p>AWN Consulting Limited The Tecpro Building Clonsaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: marcelo.allende@awnconsulting.com</p>	<p>Ms. Ciara Nolan – MSc in Environmental Science and BSc. Eng in Energy Systems Engineering. Member of both the Institute of Air Quality Management (MIAQM) and the Institute of Environmental Science (MIEnvSC).</p>	<ul style="list-style-type: none"> • Air Quality
<p>AWN Consulting Limited The Tecpro Building Clonsaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: marcelo.allende@awnconsulting.com</p>	<p>Ms. Ciara Nolan – MSc in Environmental Science and BSc. Eng in Energy Systems Engineering. Member of both the Institute of Air Quality Management (MIAQM) and the Institute of Environmental Science (MIEnvSC).</p>	<ul style="list-style-type: none"> • Climate

<p>AWN Consulting Limited The Tecpro Building Clonshaugh Business & Technology Park Dublin 17 T: 01 847 4220 E: fergal.callaghan@awnconsulting.com</p>	<p>Mr. Fergal Callaghan – Environmental Consultant</p>	<ul style="list-style-type: none"> • Wind and Microclimate
<p>Martin Peters Associates Consulting Engineers 26 Upper Pembroke Street, Dublin 2 D02 X361 T: 01 649 9001 E: martin@mpa.ie</p> <p>In conjunction with</p> <p>IE Consulting Engineers, Innovation Centre, Green Road, Carlow, R93 W248</p>	<p>Ms. Jacqueline McHugh – Ceng, CEny MCIWEM on behalf of IE Consulting. Bachelor of Science Degree in Environmental Technology, Higher National Certificate in Civil Engineering and Masters in Environmental Management and Urban Drainage</p> <p>Mr. Jer Keohane – Director with EI Consulting, B.Sc Degree in Geology and Masters Degree in Water Resource Engineering and CGEOL FCIWEM MIEI.</p>	<ul style="list-style-type: none"> • Land & Soils • Water
<p>Martin Peters Associates Consulting Engineers 26 Upper Pembroke Street, Dublin 2 D02 X361 T: 01 649 9001 E: martin@mpa.ie</p>	<p>Mr. Brian Condon – BSc CMILT MCIHT. Bachelor of Science in Civil Engineering. Chartered Member of the Institute of Logistics and Transport and Member of the Chartered Institute of Highways and Transportation.</p>	<ul style="list-style-type: none"> • Material Assets - Transport
<p>Martin Peters Associates Consulting Engineers 26 Upper Pembroke Street, Dublin 2 D02 X361 T: 01 649 9001 E: martin@mpa.ie</p> <p>In conjunction with</p> <p>IE Consulting Engineers, Innovation Centre, Green Road, Carlow, R93 W248</p>	<p>Ms. Jacqueline McHugh – Ceng, CEny MCIWEM. Bachelor of Science Degree in Environmental Technology, Higher National Certificate in Civil Engineering and Masters in Environmental Management and Urban Drainage</p>	<ul style="list-style-type: none"> • Material Assets - Utilities
<p>Courtney Deery Heritage Consultancy Ltd. Lynwood House, Ballinteer Road, Dublin 16 D16 H9V6 T: 01 54 75 795 E: lisa@courtneydeery.ie</p>	<p>Dr. Yolande O’ Brien – BA, MA and PhD in Archaeology. Member of the Institute of Archaeologists of Ireland (IAI).</p> <p>Ms. Lisa Courtney – BA (Hons) in Archaeology and MSc in Environmental Resource Management.</p>	<ul style="list-style-type: none"> • Archaeology, Architectural and Cultural Heritage

	Ms. Gill McLoughlin – BA (Hons) in Archaeology from University College Dublin.	
Parkhood Landscape Architect 6-9 Trinity Street Dublin 2 T: 01 6950005 E: andrewbunbury@parkhood.com	Mr. Andrew Bunbury- BA DipLA CMLI. Director at Park Hood, Chartered Member of the Landscape Institute.	• Landscape and Visual Impact

Table 1.1 EIAR Specialist Consultants

1.8 Structure of Environmental Impact Assessment Report

The EIAR is sub divided into 3 no. volumes as follows:

- Volume I - Non-Technical Summary;
- Volume II - Environmental Impact Assessment Report; and
- Volume III - Appendices to Environmental Impact Assessment Report.

Volume II is presented as 17 no. chapters as outlined in the Table 1.2 below.

Chapter	Chapter Title	Chapter Description
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	Planning and Development Context	Describes the site context, the planning history of the subject site and the surrounding site and the local, regional and national policies that the proposed development will be assessed against.
4	Population and 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.
5	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.
6	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 recommends mitigation measures.
7	Water (Hydrology & Hydrogeology)	Provides an overview of the baseline position, the potential impact of the proposed development on water quality and quantity and recommends mitigation measures.
8	Noise and Vibration	Provides an overview of the baseline noise environment, the potential impact of the proposed development and recommends mitigation measures.

9	Air Quality	Provides an overview of the baseline air quality and climatic environment, the potential impact of the proposed development and recommends mitigation measures.
10	Climate	Provides an overview of the baseline climatic environment, the potential impact of the proposed development and the vulnerability of the project to climate change.
11	Wind & Micro Climate	This chapter assesses the baseline conditions currently existing on site and in its immediate surrounds and likely impacts on the microclimate of the completed buildings and open spaces
12	Material Assets Transport	Describes the traffic and transport infrastructural requirements of the proposed development and the likely impact of the proposed development on material assets.
13	Material Assets Utilities	Describes the services and infrastructural requirements of the proposed development and the likely impact of the proposed development on material assets.
14	Archaeological, 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 recommends mitigation measures.
15	Landscape and 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 recommends mitigation measures.
16	Interactions between Environmental Factors	Describes the potential interactions and interrelationships between the various environmental factors discussed in the above chapters.
17	Principle Mitigation and Monitoring Measures	Sets out the key mitigation and monitoring measures included in the EIA document for ease of reference.

Table 1.2 EIA Chapter Outline

Each chapter of this EIA assesses the direct, indirect, cumulative and residual impact of the proposed development for both the construction and operational stage of the proposed development.

In preparing the EIA the following regulations and guidelines were considered:

- The requirements of applicable EU Directives and implementing Irish Regulations regarding Environmental Impact Assessment;
- 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 – DRAFT (Environmental Protection Agency, August 2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

In addition, specialist disciplines have had regard to other relevant guidelines, and where relevant these are noted in individual chapters of the EIA.

1.9 Cumulative Projects

A review of the online planning register on Fingal County Council's website has indicated that there are no Large-scale Residential development projects abutting the subject lands that have been recently granted permission for development. There are several existing planning permissions on record in the area ranging from small-scale extensions and alterations to existing residential properties to Strategic Housing Developments (SHD). A review of Fingal County Council and An Bord Pleanála's planning registers found the following planning applications relating to large infill sites within the surrounding area, which are also zoned for regeneration.

Ballymastone, Donabate, Co. Dublin

LRD0008/S3

Permission granted by Fingal County Council on 11th November 2022 and upheld by An Bord Pleanála on 28th March 2023 for development at Ballymastone, Donabate, Co. Dublin for the construction of a residential development of 432 no. residential dwellings, creche, landscaping, public realm improvements, and all ancillary site development works. The proposed development will consist of 93 x apartments, 213 no. 2-storey houses and 126 no. 2 to 3-storey duplex units. The approved development provides for outdoor amenity areas, landscaping, car parking, bicycle racks, bin stores and ancillary plant.

Lands at Baldoyle. (Formerly known as the Coast), Dublin 13

LRD0007/S3

Permission was granted by Fingal County Council on 20th January 2023 and upheld by An Bord Pleanála on 28th February 2023 on lands at Baldoyle, (formerly known as the Coast, Dublin 13. In summary, the development consisted of amendments to previously permitted application (FCC Reg. Ref. F16A/0412 (ABP Reg. Ref. PL06F.248970) and amended under FCC Reg. Ref. F20A/0258, F21A/0046 and F22A/0017). The amendments would result in the omission of 28 no. apartments and the addition of 26 no. houses resulting in the provision of 88 no. apartments and 54 no. houses, the reconfiguration of internal road layout, alterations to basement levels and car and cycle parking spaces and the introduction of a linear park.

Lands at Site A (White Car Park), Blanchardstown Town Centre, Coolmine, Dublin 15

LRD0001/S3

Permission was granted by Fingal County Council on 12th January 2023 and upheld by An Bord Pleanála on 26th May 2023. The development consists of 971 no. apartments in 7 no. buildings, 7 no. commercial units, mobility hub, community facility, Place of Worship and 1 no. childcare facility. The apartments comprise of 117 no. studio apartments, 368 no. 1 bed apartments, 422 no. 2 bed apartments, and 64 no. 3 bed apartments in 7 no. buildings (Blocks A, B, C, D, E, F, and G) ranging from 1 no. to 16 no. storeys in height, over a basement level (below 6 no. of the blocks).

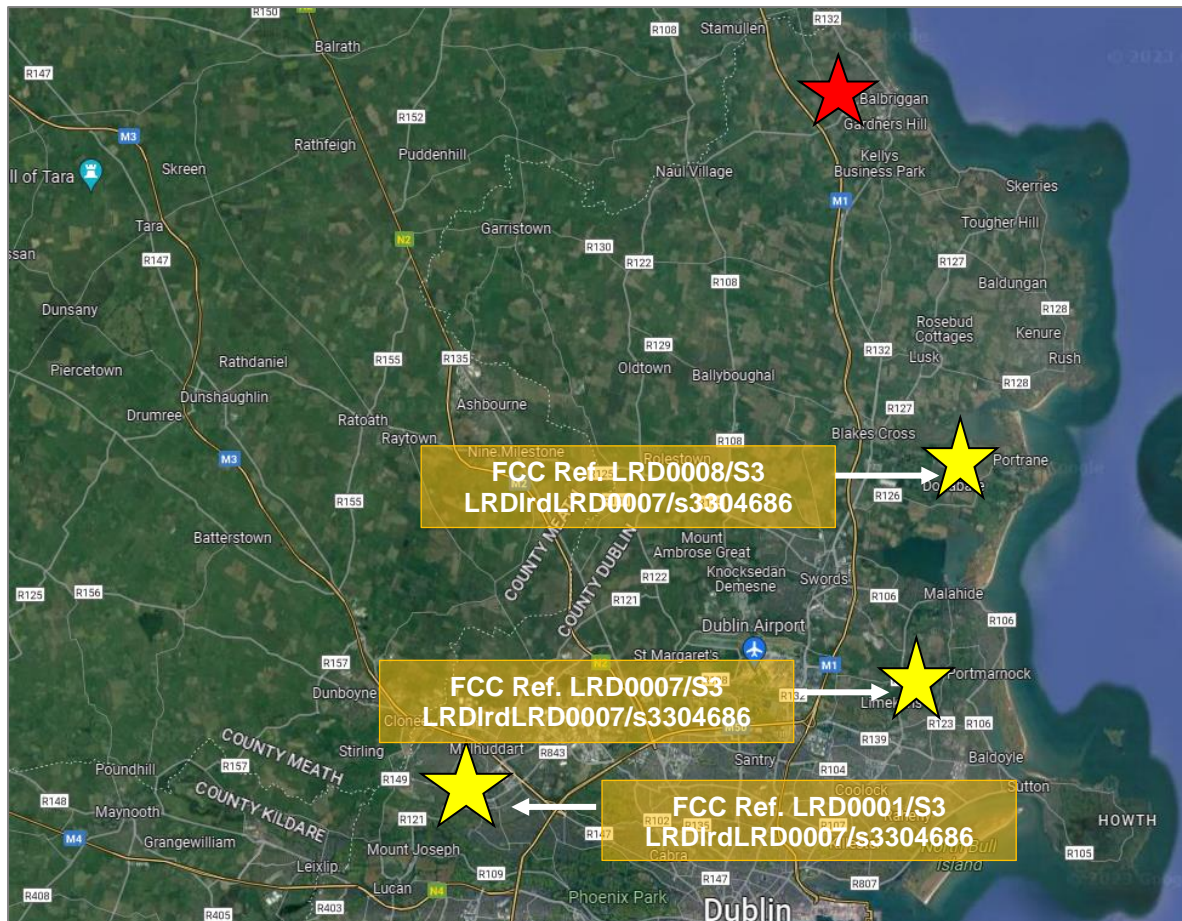


Figure 1.1 Locations of LRD applications (yellow stars) in relation to the subject site (red star) in North Dublin.

1.10 Consultation

In preparing the subject Large-scale Residential Development application and EIAR, the applicant and design/EIAR team have undertaken extensive pre-planning consultation with Fingal County Council. Guidance received during these consultations was integrated into the design and in turn is assessed in this EIAR. The feedback received during these consultations and the subsequent amendments made to the scheme in response are detailed in Section 2.4.4 of the EIAR as well as in Section 3.0 of the Statement of Consistency & Planning Report, prepared by Hughes Planning and Development Consultants, which accompanies this application.

Further to the above, the Large-scale Residential Development Opinion, issued by Fingal County Council (under FCC Reg Ref LRD0006/S2), detailed specific information required for inclusion with any subsequent application for permission, pursuant to article 285(5)(b) of the Planning and Development Regulations 2001 (as amended). The Statement of Response to Pre-application Consultation Opinion, prepared by Hughes Planning and Development Consultants, which accompanies this application outlines how this aspect of Fingal County Council's Development Opinion has been satisfied.

Additionally, prior to lodging this application, the required information has been issued to the Department of Housing, Planning and Local Government's EIA Portal. The purpose of this tool is to inform the public, in a timely manner, of applications that are accompanied by an EIAR. The portal provides a URL link to a dedicated website for this proposed development and a copy of the EIAR is available on this website. The website address is as follows: www.flemingtonlane.ie. This website is publicly accessible and will allow members of the public to review the application material and EIAR.

Subsequent consultation with the public on the application and accompanying EIAR will be facilitated following the lodgement of the application to Fingal County Council. Pursuant to the requirements of the Planning and Development Act, 2000 (as amended), site notices have been erected on site and a newspaper notice has been published in the Irish Daily Star. Both the site and newspaper notices erected/published advise members of the public that a Large-scale Residential Development application accompanied by an EIAR has been lodged with Fingal County Council and provides details on how that can make an observation on the same should they see fit. Details of the website address feature on the site notices erected on site and the newspaper notice published as well as on Fingal County Council's website.

1.11 Statement of Difficulties Encountered

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

Every effort has been made to ensure that the EIAR is error free and accurate. However, there may be instances within the document where typographical errors or minor errors may occur. Any such cases are unlikely to have any material impact on the overall and final findings contained in the EIAR.

1.12 References

A reference list detailing the sources used for the descriptions and assessment has been included with each chapter, where and if necessary.

2.0 PROJECT DESCRIPTION AND ALTERNATIVES EXAMINED

2.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants. More specifically, this chapter of the EIAR was prepared jointly by Mrs. Muireann Coughlan, Associate Planner and Ms. Danielle O' Leary, Senior Planner, with Hughes Planning and Development Consultants.

Mrs. Muireann Coughlan graduated with honours from University College Cork with a Masters in Planning and Sustainable Development (MPLAN) in 2010, having previously completed a joint honours Bachelor of Arts degree in Geography and Sociology. Muireann has also completed a Post Graduate Certificate in Design Management. Muireann is currently an Associate with Hughes Planning and Development Consultants. Prior to this, she worked in local government and private consultancies in both Ireland and the United Kingdom. Muireann has 13 years of experience in the field of planning, which has included providing consultancy services in respect of several major residentially-led projects. Muireann is a Full Member of the Royal Town Planning Institute (RTPI) and Corporate Member of the Irish Planning Institute (IPI).

Ms. Danielle O'Leary of Hughes Planning and Development Consultants, graduated with honours from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2018, having previously completed a Bachelor of Science Degree in Earth and Environmental Systems Sciences from University College Cork (UCC) in 2016. Danielle has over 5 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major residentially-led projects, including EIA. Danielle is currently a Senior Planner in the practice of Hughes Planning and Development Consultants and is a member of the Irish Planning Institute (IPI).

This chapter provides a detailed description of the project together with details of the existing environment as well as explaining the evolution of the scheme design through the reasonable alternatives examined. In accordance with Article 5(1)(a) of the 2011 Directive, as amended by Directive 2014/52/EU, the description of the proposal should comprise “...*information on the site, design, size and other relevant features of the project*”.

2.2 Site Location and Context

The Site consists of a large parcel of land (c.22.62ha), with an area further to the west identified for the provision of Class 1 public open space. We note that development has taken place and infrastructure has been developed on and around the subject lands in recent years, following a number of planning permissions being issued for the Site and surrounding area (discussed further in Section 4.0 of this report below). This includes the construction of a water pumping station in the southern portion of the Phase 1 lands; the Castlemill Link Road south east of the site; Coláiste Ghlór na Mara School and St. Georges National School to the south east; the southern part of the 'Boulevard' Road (which when completed will run from the intersection with the proposed C-Ring Road south to Naul Road).

The topography of the land is undulating. The Site predominantly slopes gently from north to south. The subject land is associated with agricultural use and is comprised of a number of fields. 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 Éireann and Dublin Bus. Bus service is provided by Dublin Bus routes 33, 33A and 33X as well as Bus Éireann routes 101 (Dublin-Drogheda) and 104 (Balbriggan Town Service). A private bus service is provided from Millfield Shopping Centre to Dublin City Centre by Balbriggan Express. The M1 motorway is 1.3km from the subject site and provides vehicular access to Dublin and the national motorway network.

The images displayed below outline the indicative site boundary in the context of its wider and immediate location.



Figure 2.1 Aerial image showing the subject site in the context of its wider environs.

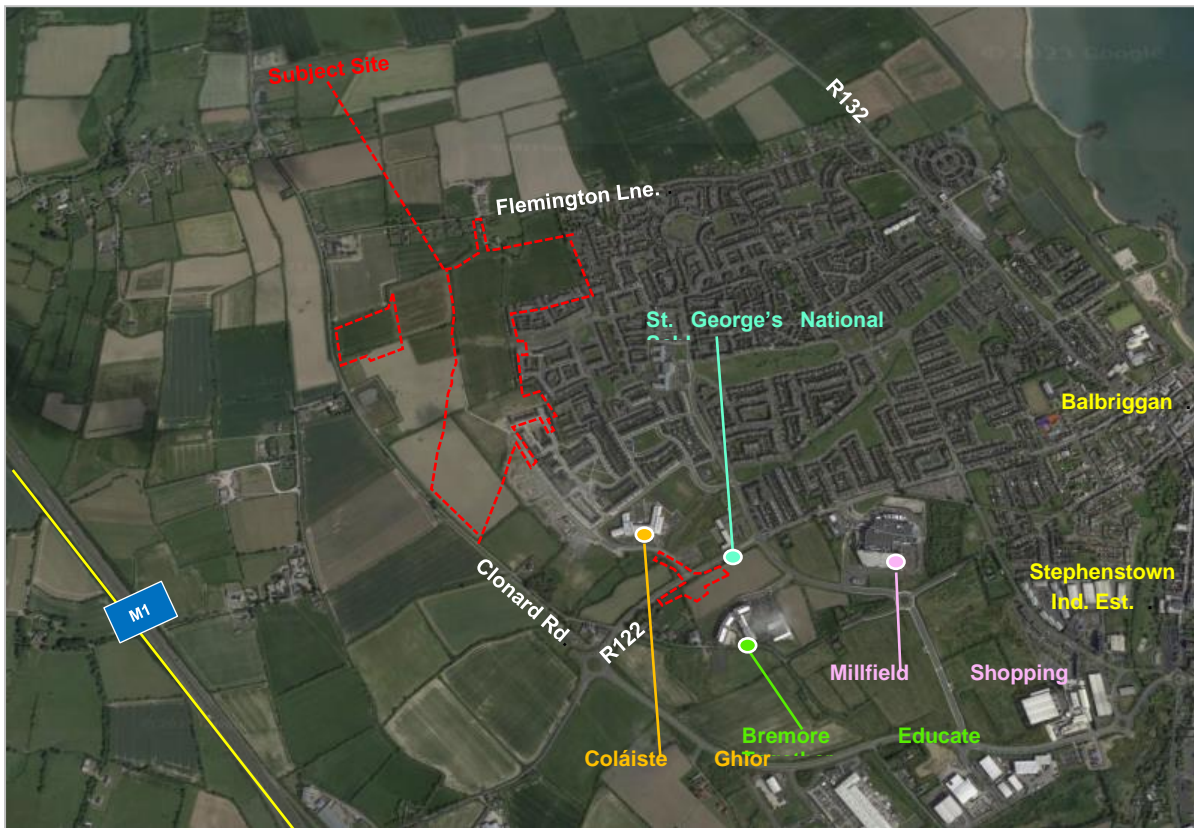


Figure 2.2 Aerial Image showing the subject site in the context of its more immediate surrounds.



View 1



View 2



View 3



View 4



View 5



View 6



View 7



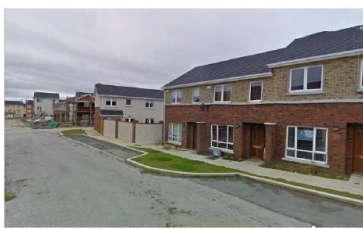
View 8



Figure 2.3 Photographs of the current site from various viewpoints.



View 1



View 2



View 3



View 4



View 5



View 6

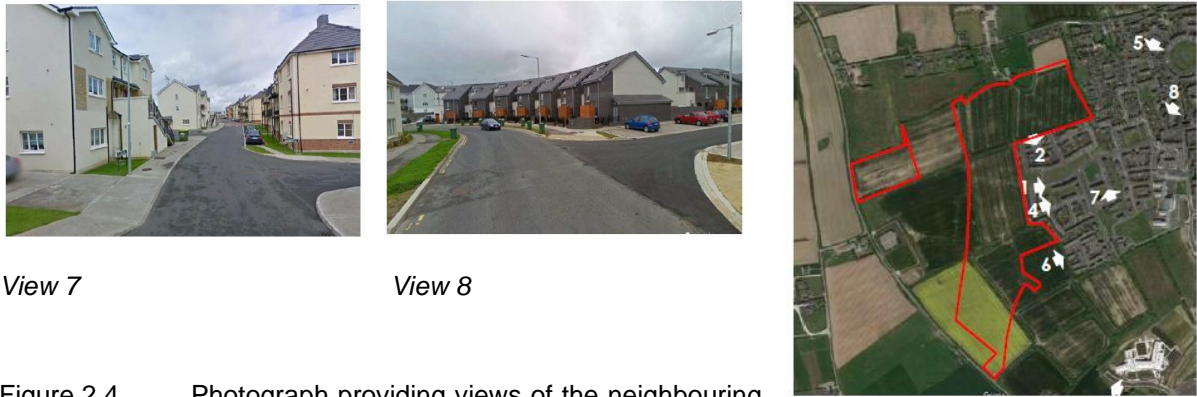


Figure 2.4 Photograph providing views of the neighbouring housing developments from the subject site.

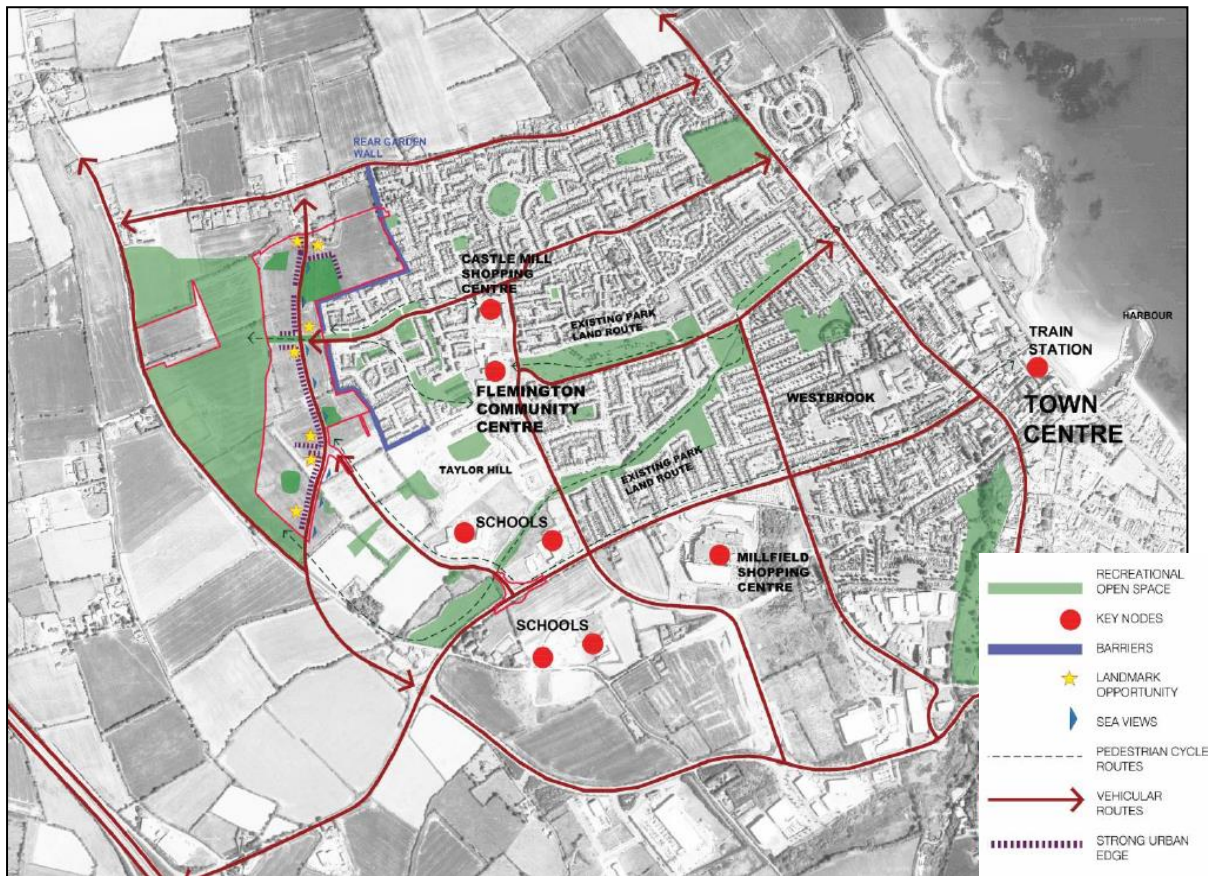


Figure 2.5 Context map demonstrating existing and proposed connections and key nodes within the wider area.

The subject site consists of a large parcel of land 22.62ha in size, with an area further to the west identified for the provision of Class 1 public open space.

Characteristics of the subject site which are of particular note to the various disciplines/specialists involved in preparation of the EIA are outlined in the individual chapters.

2.3 Nature and Extent of Proposed Development

In summary, the Applicant is applying to Fingal County Council, under the Large-scale Residential Development process, for the following (as per the public notices):

- (i) *The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*
- (ii) *The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35 no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:*
- (a) *Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).*
- (b) *Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.*
- (c) *Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes) and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).*
- (d) *Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8 no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.*
- (e) *Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to*

three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments (6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).*
- (iv) the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.*
- (v) the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.*
- (vi) a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.*

The proposed development, as designed by the Project Team, in summary, comprises the demolition of an existing single storey dwelling (c.151sq.m) and an associated storage shed located within its curtilage (14.9sq.m), and a larger agricultural shed outbuilding located further south of this dwelling (366sq.m), all of which are located to the immediate south of Flemington Lane; to facilitate the construction of a mix-use residential and commercial scheme comprising a total of **564 no.** dwelling units (378 no. houses, 84 no. duplex units and 102 no. apartments). The proposal also includes the provision of 9 no. commercial units and 6 no. communal units.

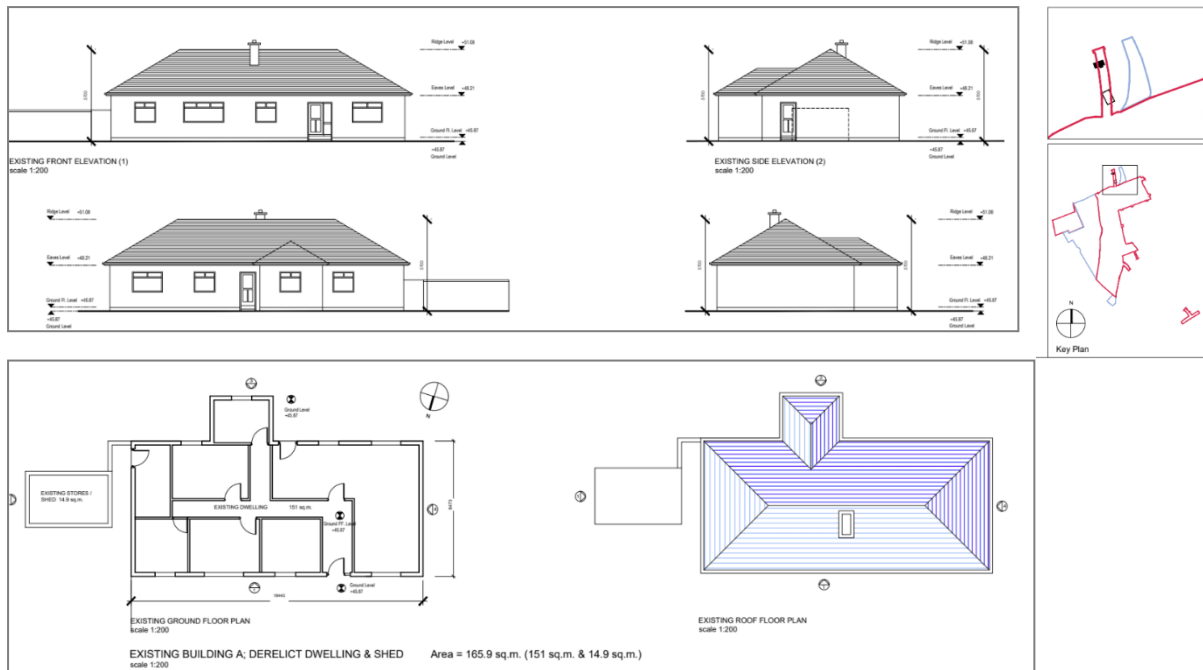


Figure 2.6 Drawing extracts showing the existing dwelling located off Flemington Lane which is proposed for demolition.

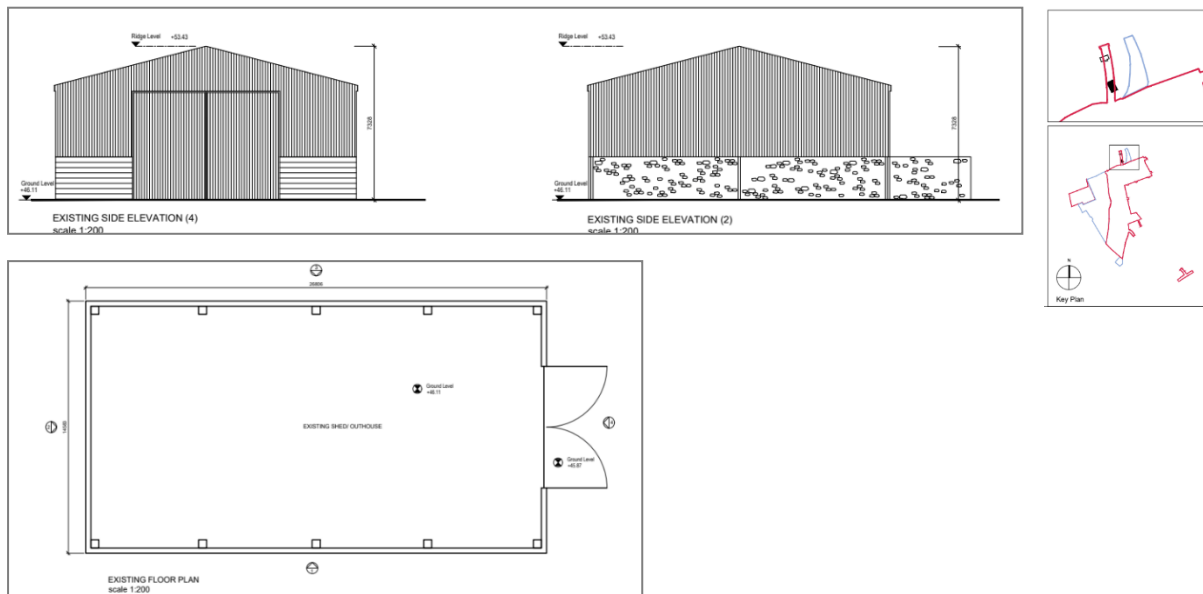


Figure 2.7 Drawing extract showing the existing shed outbuilding located off Flemington Lane which is proposed for demolition.

Also included as part of the scheme is the creation of a link road from Flemington Lane to the north, through the central portion of the site, running in a north south direction. This link road provides a central access route to serve all units within the proposed development. It is also noted that the Boulevard road is constructed and operational with the redline proposed only around the areas where connections are possible.

In terms of car parking and bicycle parking provision, the proposal includes a total of 927 no. car parking spaces, which is inclusive of 806 no. resident spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to the creche facilities and 9 no. set-down spaces. A total of 2,014 no. bicycle parking spaces are proposed, including 1,326 no. resident spaces, 640 no. visitor spaces, and 48 no. spaces allocated to the proposed creche facilities.

A more detailed breakdown of the proposed development will follow under the sub-headings below, including a description of the proposed Character Areas within the scheme. The key development statistics are also outlined again below for ease of reference:

Key Development Statistics					
Site Area	Total Site Area – 22.62ha Residential Site Area – 19.28ha				
Demolition	Derelict House and Shed – 165.9sq.m				
	Large Outhouse/Shed = 366sq.m				
	Total Demolition – 531.9sq.m				
Total No. of Residential Units	546 no.(Total)				
	<i>House Units</i>		<i>Duplex Units</i>		<i>Apartment Units</i>
	378 no.		84 no.		102 no.
No. of Units Per Character Area	<i>Flemington Park</i>	<i>Hampton Park North</i>	<i>Hampton Park Central</i>	<i>Hampton Park South</i>	<i>Tanners Lane</i>
	137 no.	128 no.	142 no.	103 no.	54 no.
Total No. of Commercial Units Proposed	9 no. (593.2sq.m)				
Creche Units	3 no. (1,227.6sq.m)				
Proposed Building Heights	2-5 storeys				
Public Open Space	Class 1 Public Open Space – 2.86ha				
	Class 2 Public Open Space – 2.268ha				
Car Parking Provision	927 no. car parking spaces (806 no. resident spaces, 94 no. visitor spaces, 11 no. disabled parking spaces, 7 no. spaces for creches and 9 no. set-down spaces)				
Bicycle Parking Provision	2,014 no. bicycle spaces (1,326 no. resident spaces, 640 no. visitor spaces and 48 no. spaces for proposed creches)				
Density	Net Density – c. 35.13 dph				
Plot Ratio	Plot Ratio as % of 19.28ha (Residential Site Area) – 0.2843				
Site Coverage	Site Coverage as a % of 19.28ha (Residential Site Area) – 16.36%				

2.3.1 Proposed Residential Scheme and Character Areas

As outlined above the proposed development seeks permission for the construction of **564 no.** residential units on the subject lands. The layout of the proposed development has been informed by the topography of the subject site, the zoned 'c-ring road' which is proposed to run through the site and through the significant planning history of the overall lands. An extract from the overall site layout plan is included overleaf:



Figure 2.8 Extract from the Proposed Site Layout Plan as prepared by Ferreira Architects.

As illustrated in the accompanying 'Character Areas' Statement as prepared by Ferreira Architects, to accompany this application, the proposed development is set out into 5 no. distinct Character Areas.

The 5 no. Character Areas referred to above, define key areas within the scheme and include:

- Hampton Park Central;
- Hampton Park South;
- Tanners Lane;
- Hampton Park North;
- Flemington Park.

These neighbourhood areas create a sense of place for future residents within the development through a combination of viewpoints, parks/open space areas, architectural features and the hierarchy of streets. Each character area comprises a mixture of house type materiality arranged within an overall legible material palette.

Drawing extracts showing the different built forms and building materials within each of the proposed character areas are provided below for the consideration of Fingal County Council.



Please refer to the Character Areas Statement prepared by Ferreira Architects for further information.

Hampton Park Central Character Area

The Hampton Park Central Character Area is centrally located between the Ring Road and the proposed parklands on the western boundary. The upper half of the area bounds onto Hamlet Land and the main entrance into the Parklands on the west. This area comprises a total of 142 no. dwelling units, inclusive of 88 no. house units (36 2-bed and 52 3-bed), 18 no. duplex units (2 1-bed, 9 2-bed and 3-bed) and 36 no. apartment units (17 1-bed and 19 2-bed). In terms of building materials, red and grey coloured brick types feature within this area as depicted in the visuals below:

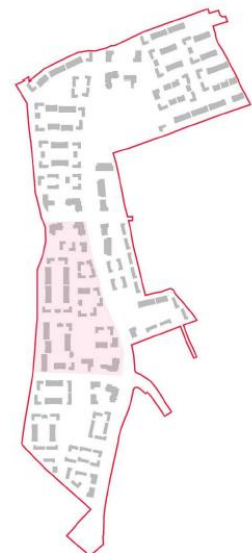


Figure 2.9 Apartment block Type HC3 at Hampton Park Central.





Figure 2.10 Duplex C-L at Hampton Park Central, note the grey stone coloured brick and render finish.



Figure 2.11 House Type C-C, C-C1 & C-D at Hampton Park Central. Note the pale brick and self-coloured render finish

Hampton South Character Area

The Hampton South Character Area is located in the south-western most portion of the subject lands. This area is defined by a central linear open space area with development on the periphery. A total of 103 no. 1 2 and 3 bedroom apartment, duplex and house units (71 no. house units, 18 no. duplex units and 14 no. apartment units) are comprised within this character area. Building materials featuring within this area include red brick and self-coloured render, with red/brown clay roof tiles. Sample images of the proposed units are shown in the extracts below:

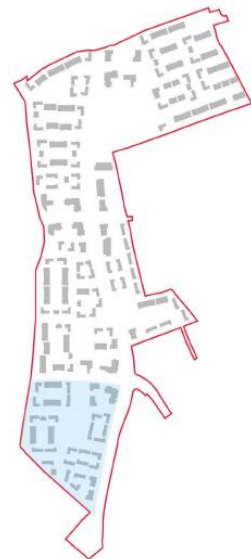




Figure 2.12 Apartment block HS1 at Hampton Park South. Note the red brick finish and metal balconies.



Figure 2.13 House Types A&B (top) and S-C and S-D (bottom) at Hampton Park South. Note the red brick and render finish.

Tanners Lane Character Area

The Tanners Lane Character Area is a long and narrow tranche of land between the ring road and the existing residential estates to the east.

This area comprises a total of 54 no. 1, 2 and 3 bedroom apartment duplex and house units (36 no. house units, 12 no. duplex units and 6 no. apartment units). The scale of development within this character area is greater to the north on the intersection with Hamlet Lane, scaling downwards toward the south. Material finishes include a mix of brick colours and render as displayed in the visuals below:

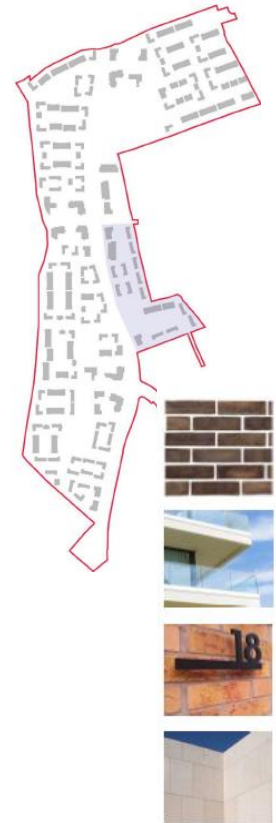


Figure 2.14 Apartment block M1 and M2 at Tanners Lane, note the brick and light-coloured stone finish



Figure 2.15 Duplex Block T-R at Tanners Lane, note the dark coloured brick finish



Figure 2.16 House Types T-C, T-D and T-C1 at Tanner Lane. Note the brock and self-coloured render finish.

Hampton Park North Character Area

The Hampton Park North Character Area is located within the north-eastern section of the site, bounded by the new Class 1 Open Space area to the west and the ring road to the east. This portion of the site provides one of the corners of the main nodal intersection and is marked by a 4 storey apartment building with a stone and brick finish, Block HS1 and the main creche for the scheme. Building heights within this character area range from 2-4 storeys comprising 128 no. 1, 2 and 3 bedroom units of varying configurations (84 no. house units, 24 no. duplex units and 20 no. apartment units). Building materials within this zone comprise cream, red and grey coloured brick, light coloured stone and coloured render as illustrated in the sample images below and overleaf.



Figure 2.17 Apartment Block HN at Hampton Park North, note the light coloured brick and stone finish.



Figure 2.18 Apartment Block N-M1 at Hampton Park North, note the brick and self-coloured render finish.



Figure 2.19 Duplex Block N at Hampton Park, note the light coloured brick and render finish.



Figure 2.20 House Type N-C and N-D at Hampton Park North. Note the grey coloured brick and render finish.

Flemington Park Character Area

The Flemington Park Character Area comprises a mix of unit types including 2, 3 and 4 bedroom apartments, duplex units and house units (137 no. units in total – 99 no. house units, 12 no. duplex units and 26 no. apartment units). Building heights within this area range from 2-4 storeys. This character area comprises a significant area of Class 2 public open space (POS 4) and units adopt various orientations onto this public space and the adjoining lands. Building materials include a mix of brick (varying colours) and render finish as per the visuals below:

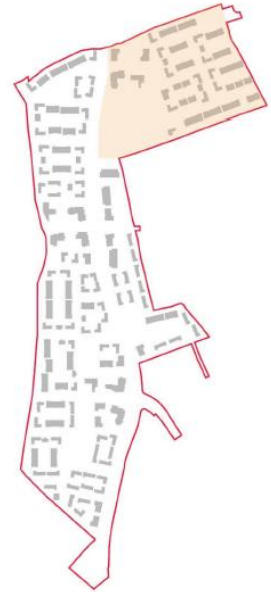


Figure 2.21 Apartment Block FP1 at Flemington Park, note the brick and light-coloured stone finish and glazed balconies.



Figure 2.22 Apartment Block FM1 and FM2 at Flemington Park, note the brick and light-coloured stone finish, glazed balconies and dark grey roof tiles.



Figure 2.23 Duplex Block F-R at Flemington Lane, note the brick and light coloured stone finish, glazed balconies and pressed metal canopy over the front door.





Figure 2.24 Duplex Block F-L at Flemington Park, note the brick and light-coloured stone finish, glazed balconies, pressed metal canopy over the front door and the dark grey roof tiles.



Figure 2.25 House Types F-C, F-C1 and F-D at Flemington Park, note the brick and self-coloured render finish and dark grey roof tiles.

We contend that the visualisations presented above, clearly demonstrate that there is significant differentiation between the building forms, finishes and forms comprised within each of the character areas, which each possessing its own distinct identity. Whilst each character area is distinct in nature, there are common forms and building elements throughout same, creating a degree of harmony throughout the scheme.

2.3.2 Nodal Clusters

As part of the design evolution 3 no. key nodal clusters have also been identified within the site:

- The Boulevard (Lower Node No. 1)
- Hampton Park (Central Node No. 2)
- Flemington Park (Upper Node No. 3)

These nodes act as anchor points within the development, encouraging a concentration of activities within each area, and the physical characteristics of which present a strong hierarchical urban form. The location of each of the proposed nodes is identified in the drawing extract overleaf. We note that the central node is located at the junction of the Flemington Link Road and Hamlet Lane. The existing residential neighbourhoods of north west Balbriggan will access to the Public Open Space to the west and its recreational sports facilities, primarily through this point.

The two lesser notes are located at the northern end of the site at Flemington Park and ay the southern junction with the Boulevard Road.

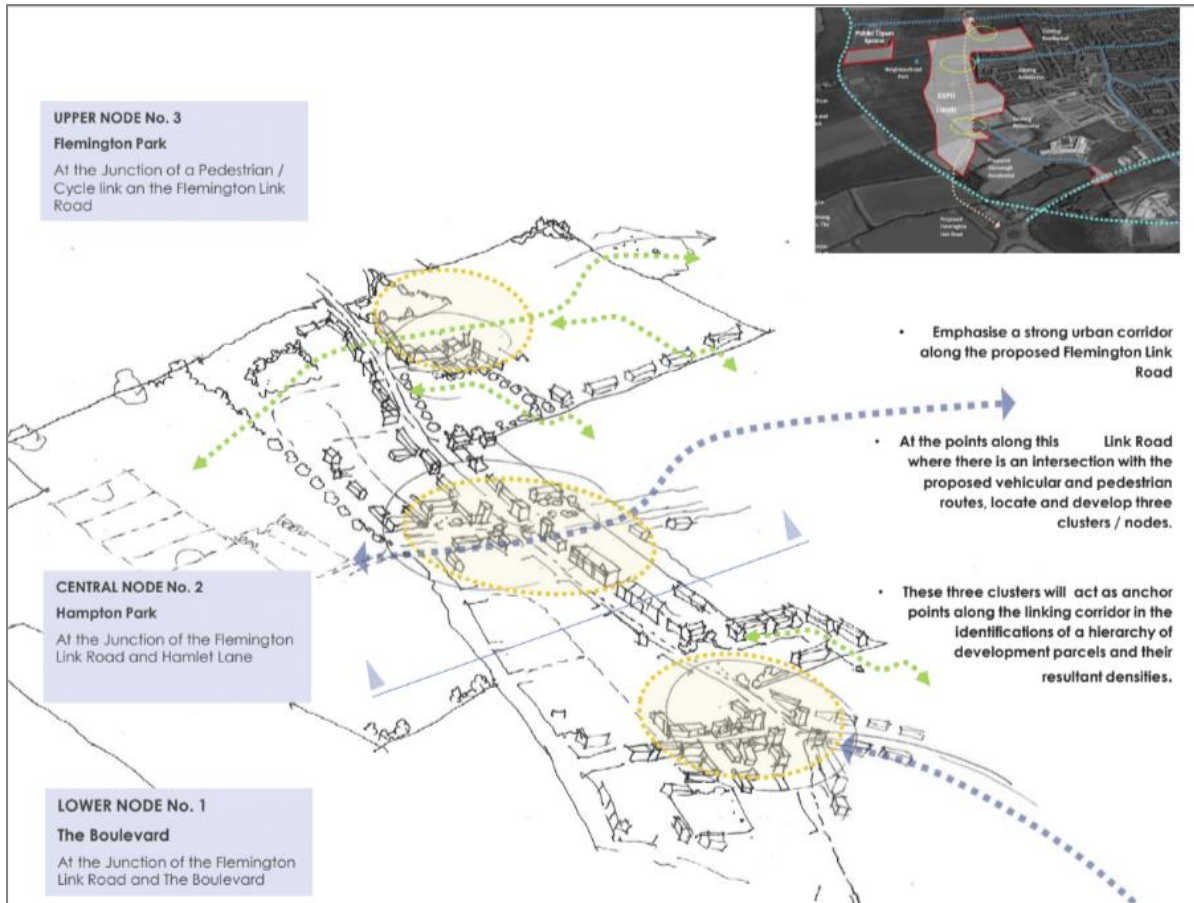


Figure 2.26 Sketch drawing as prepared by Ferreira Architects showing the 3 no. primary nodes within the proposed development.



Figure 2.27 CGI view showing the main landmark buildings within the Flemington Park Node (Upper Node No. 3)



Figure 2.28 CGI view looking south along the Hampton Park Node (Central Node No. 2)



Figure 2.29 CGI view looking north along the Hampton Park Node (Central Node No. 2)



Figure 2.30 CGI view looking north-east at the Boulevard Node (Lower Node No. 1)

As is clear from the visualisations presented above, the landmark buildings located along the spine road, featuring as 3 key nodes (Lower Node No. 1 'The Boulevard'. Central Node No. 2 'Hampton Park' and Upper Node No. 3, 'Flemington Park') emphasise a strong urban character and act as anchor points within the scheme and centres of activity. For further details, please refer to Architectural Design Statement as prepared by Ferreira Architects which accompanies this application.

The following section of this report will provide a more detailed review of the residential units proposed on-site.

2.3.3 Proposed Apartments and Duplex Units

The development proposal will include the construction of 186 no. apartments and duplex units on the application site. A total of 102 no. apartments will be provided in 10 no. blocks. 84 no. units will be provided via duplex apartment units scattered throughout the development. More, specifically:

Block Name	No. of Storeys	Total No. of Units	Position on the Site
<i>Apartment Block FM1</i>	3	6 no.	North (Flemington Park)
<i>Apartment Block FM2 (Flemington Park)</i>	3	6 no.	North (Flemington Park)
<i>Apartment Block FP1 (Flemington Park)</i>	4	14 no.	North (Flemington Park)
<i>Apartment Block HN1</i>	4	14 no.	Central/North (Hampton Park North)
<i>Apartment Block M1</i>	3	6 no.	Central/North (Hampton Park North)
<i>Apartment Block HC1</i>	3	10 no.	Central (Hampton Park Central)
<i>Apartment Block HC2</i>	4	12 no.	Central (Hampton Park Central)
<i>Apartment Block HC3</i>	5	14 no.	Central and South (Hampton Park Central)
<i>Apartment Block M2</i>	3	6 no.	Central (Tanners Lane)
<i>Apartment Block HS1</i>	4	14 no.	South (Hampton South)
Apartments Total		102 no.	
<i>Duplex Type E</i>	2	4 no.	Central and South
<i>Duplex Type G</i>	2	12 no.	Centre and North
<i>Duplex Type L</i>	2-3	12 no.	Centre and South
<i>Duplex Type R</i>	2-3	32 no.	Scattered Throughout
<i>Duplex Type N</i>	3	24 no.	Scattered Throughout
Duplex Units Total		84 no.	

Table 2.1 Break-down of apartments and duplex units featuring in the proposed development

All apartments will have access to a private balcony/terrace areas which are directly accessible from the main living area. The Images included in the subsequent sections overleaf contain extracts from the architectural drawings, prepared by Ferreira Architects, showing the floor layouts of the proposed apartment buildings and duplex units on the application site. Please refer to submitted plans for full consideration.

The apartment and duplex unit blocks are described as follows:

2.3.3.1 *Apartment Block Type M– Unit Type M (FM1 ,FM2, M1, M2)*

Apartment Blocks M, Unit Type M is a 3-storey apartment block located scattered throughout the development site (Flemington Park, Hampton Park North, Tanners Lane). There are 5 no. type M apartment blocks on-site, comprising a total of 24 no. 2-bedroom units. Details pertaining to the proposed unit sizes are included in the accompanying HQA document as prepared by Ferreira Architects.



Figure 2.31 Proposed 3D Views of Apartment Block Type M

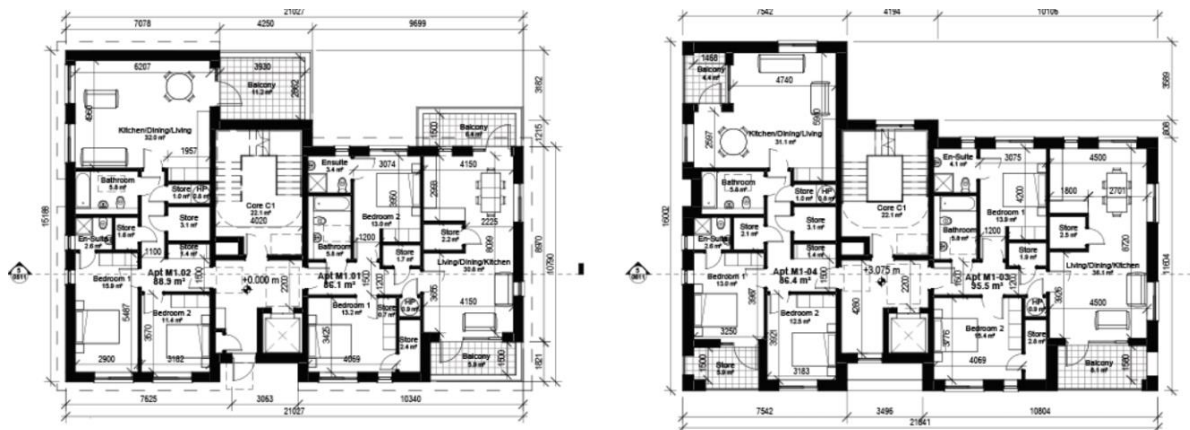


Figure 2.32 Proposed ground and first floor plans of Apartment Block Type M

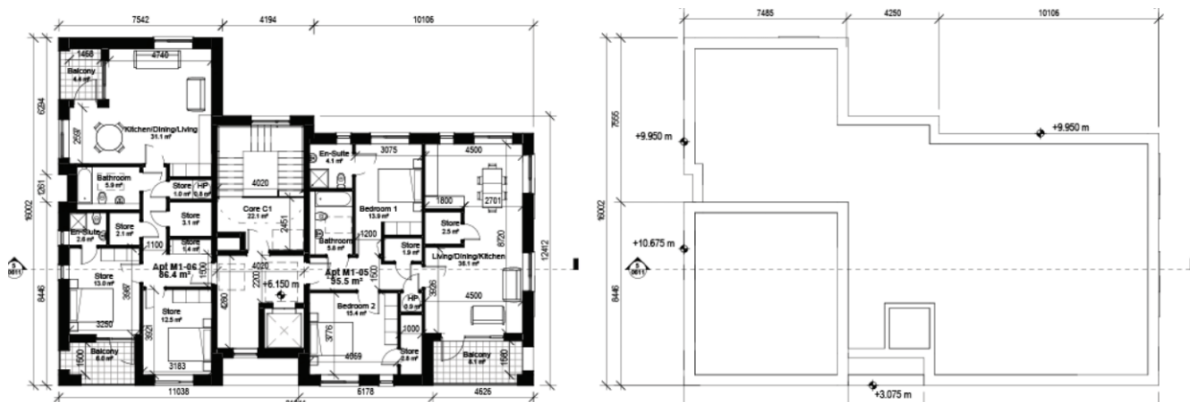


Figure 2.33 Proposed second and roof floor plans of Apartment Block M

2.3.3.2 *Apartment Block Type FP1 – (Flemington Park)*

Apartment Block FP1 is located within Flemington Park, ranges in height from 3-4 storeys and comprises a total of 14 no. units (8 no. 2-bedroom units and 6 no. 1-bedroom units). At ground floor level this Block comprises; a commercial unit, a communal space and a bicycle store. Extracts from the relevant plans are included below.



Figure 2.34 Proposed 3D Views of Apartment Block FP1



Figure 2.35 Proposed ground (left), first and second (middle) and third floor (right) plans of Apartment Block FP1

2.3.3.3 *Apartment Block Type HN1 – (Hampton Park North)*

Apartment Block HN1 is located within the Hampton Park North Character Area, ranges in height from 3-4 storeys and comprises a total of 14 no. units (8 no. 2-bedroom units and 6 no. 1-bedroom units). At ground floor level this Block comprises 1 no. commercial units, 1 no. communal units and a bicycle storage area. Extracts from the relevant plans are included below and overleaf:



Figure 2.36 Proposed 3D view of Apartment Block HN1



Figure 2.37 Proposed ground (left), first and second (middle) and third (right) floor plans of Apartment Block HN1.

2.3.3.4 Apartment Block Type HS1 – (Hampton Park South)

Apartment Block HS1 is located in the Hampton Park South Character Area and comprises a building height of 4 storeys. The first to third floor levels of the block comprise a total of 14 no. apartment units (8 no. 2-bedroom units and 6 no. 1-bedroom units). The ground floor level of the proposed block also consists of 2 no. adjoining communal spaces, 1 no. commercial units and a bicycle storage area. Extracts from the relevant plans are included below.



Figure 2.38 Proposed 3D views of Apartment Block HS1



Figure 2.39 Proposed ground (left), first and second (middle) and third (right) floor plans of Apartment Block HS1.

2.3.3.5 Apartment Block Type HC1 – (Hampton Park Central)

Apartment Block HC1 is located within the Hampton Park Central Area, comprises a building height of 3 storeys and a total of 10 no. apartments (5 no. 2-bedroom units and 5 no. 1-bedroom units). At ground floor level this Block includes 1 no. commercial unit, 1 no. communal space area and 1 no. bicycle storage area. Extracts from the relevant plans are included below.



Figure 2.40 Proposed 3D views of Apartment Block HC1



Figure 2.41 Proposed ground (left) and first and second (middle) floor levels of Apartment Block HC1.

2.3.3.6 Apartment Block Type HC2 – (Hampton Park Central)

Apartment Block HC2 is located within the Hampton Park Central Area, comprises a building height of 4 storeys and a total of 12 no. apartments (6 no. 2-bedroom units and 6 no. 1-bedroom units). At ground floor level this Block includes 1 no. commercial unit, 1 no. communal space area and 1 no. bicycle storage area. Extracts from the relevant plans are included below and overleaf.



Figure 2.42 Proposed 3D view of Apartment Block HC2



Figure 2.43 Proposed ground (left) first and second (middle) and third (right) floor plans of Apartment Block HC2.

2.3.3.7 Apartment Block Type HC3 – (Hampton Park Central)

Apartment Block HC3 is located within the Hampton Park Central Area, comprises a building height of 4-5 storeys and a total of 14 no. apartments (8 no. 2-bedroom units and 6 no. 1-bedroom units). At ground floor level this Block includes 1 no. commercial unit, 1 no. communal space area and 1 no. bicycle storage area. Extracts from the relevant plans are included below and overleaf.



Figure 2.44 3D views of Apartment Block HC3



Figure 2.45 Ground (left) and first and second (right) floor plans of Apartment Block HC3

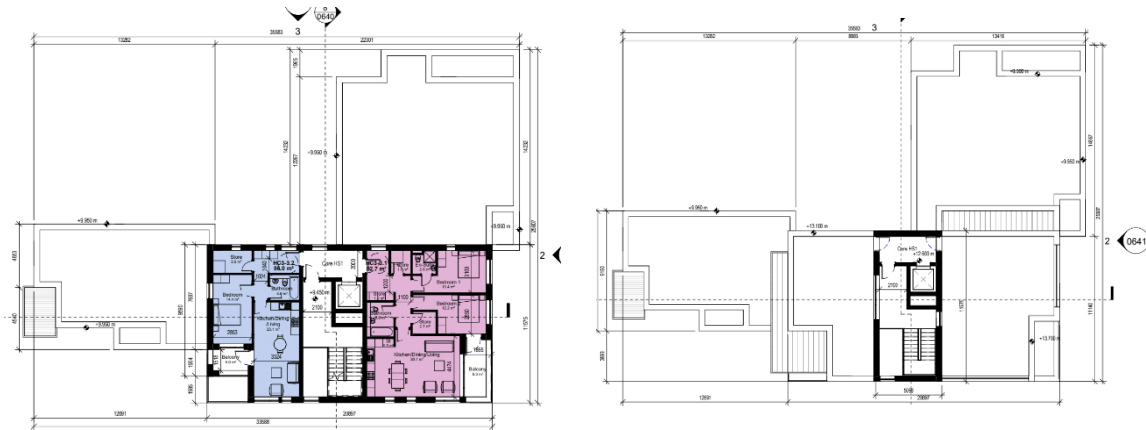


Figure 2.46 Third (left) and fourth (right) floor plans of Apartment Block HC3.

2.3.3.8 Duplex Type E – Unit Type E

Duplex Type E's feature throughout the subject site. These duplex units are 2 storeys in height and each block provides 2 no. units, consisting of 1 no. one-bed and 1 no. two-bed).



Figure 51.0 Proposed 3D View of Duplex Type E .

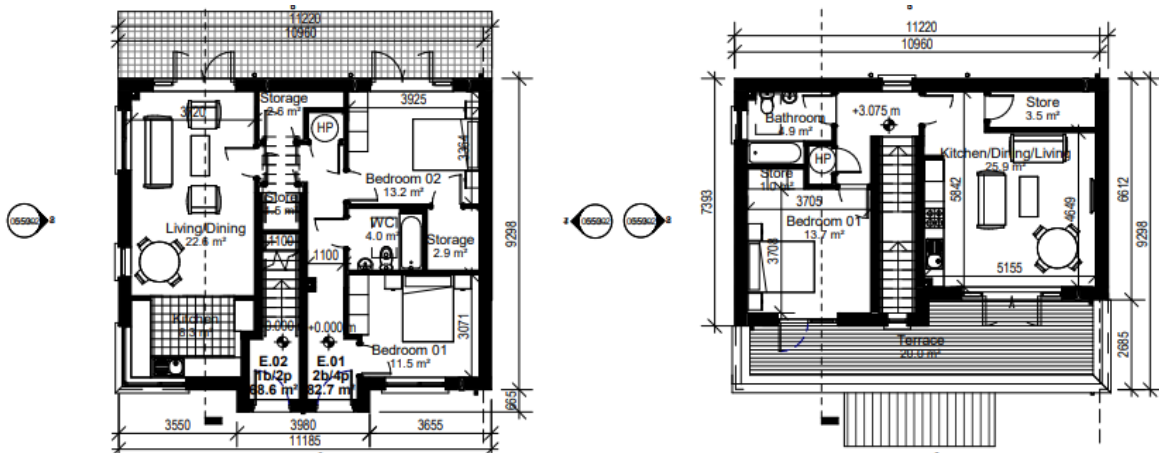


Figure 2.47 Proposed ground (left) and first (right) floor plan of Duplex Block B

2.3.3.9 *Duplex Type G – Unit Type G*

Duplex Block G's also feature throughout the subject site. These duplex units are two storey in height and each block consists of 2 no. 1-bedroom units.



Figure 53.0 Proposed 3D Views of Duplex Type G

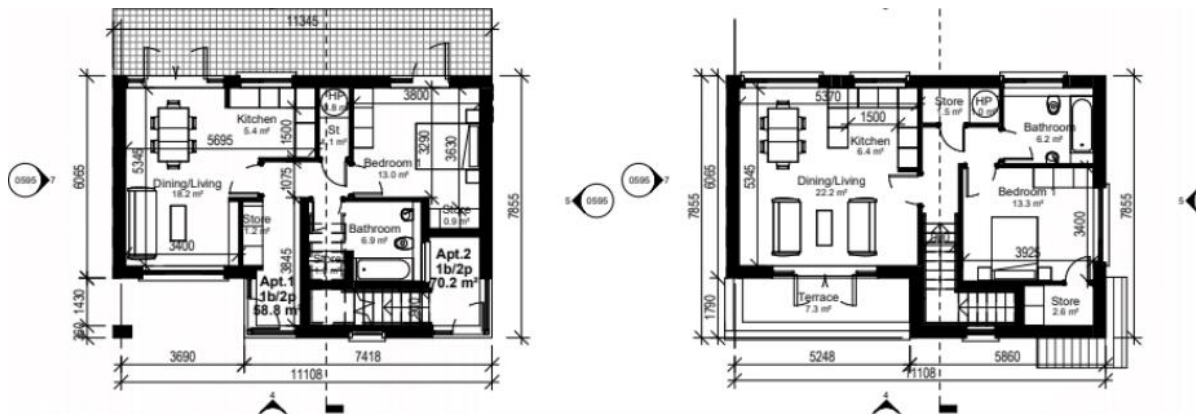


Figure 2.48 Proposed ground (left) and first floor (right) plans of Duplex Type G

2.3.3.10 *Duplex Type L – Unit Type L*

A number. Duplex Block L's feature throughout the subject site. These duplex units are three storeys in height and block provides 1 no. 3-bedroom unit and 1 no. 1-bedroom unit.



Figure 2.49 Proposed 3D Views of Duplex Type L

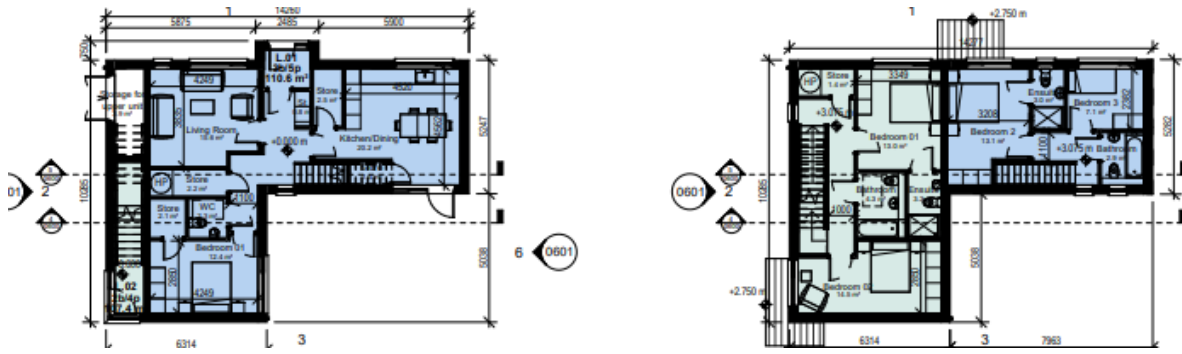


Figure 2.50 Proposed ground (left) and first (right) floor plans of Duplex Block Type L.

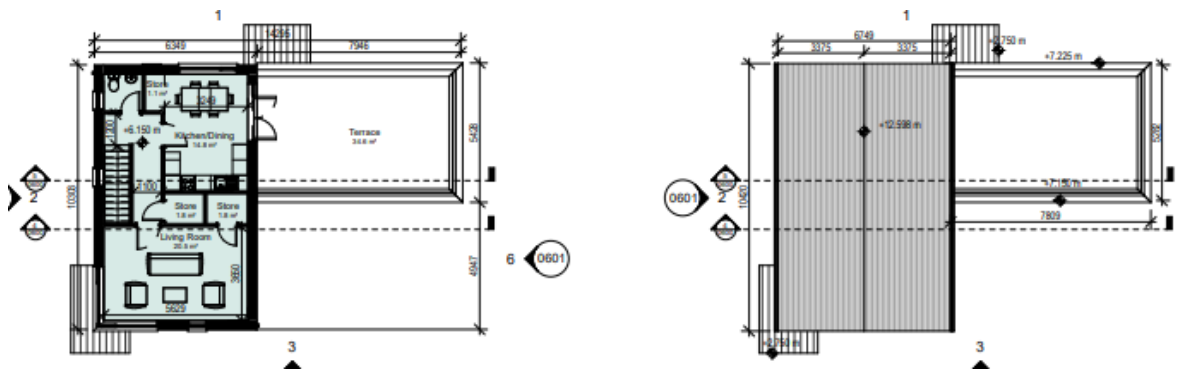


Figure 2.51 Proposed second (left) and roof (right) floor plans of Duplex Block Type L.

2.3.3.11 Duplex Type R – Unit Type R

Duplex Type R' feature throughout the subject site. These duplex units are two-three storeys in height and each block provides 1 no. 2-bedroom unit, 2 no. 2-bedroom units and 1 no. three-bedroom unit.



Figure 2.52 3D views of Duplex Block Type R

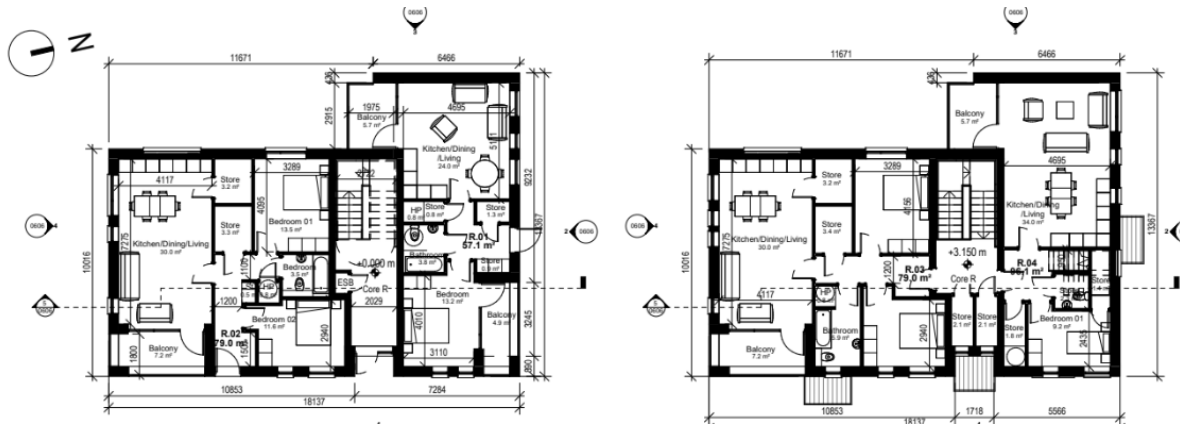


Figure 2.53 Proposed ground (left) and first (right) floor plans of Duplex Block Type R

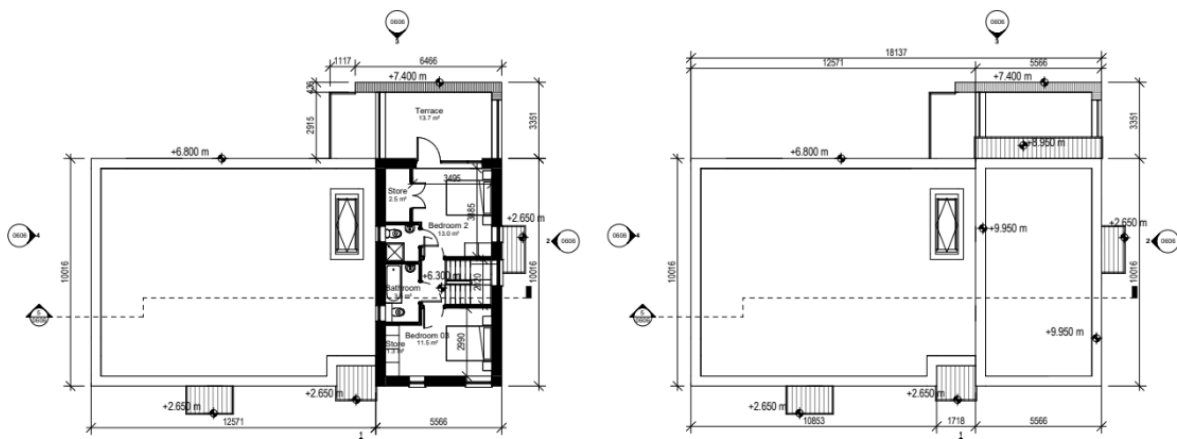


Figure 2.54 Proposed second (left) and roof (right) plans of Duplex Block Type R

2.3.3.12 Duplex Type N – Unit Type N

Duplex Block N's feature throughout the subject site. These duplex blocks are 3 storeys in height and each block comprises 6 no. units (3 no. 2-bedroom units, and 4 no. 2-bedroom units).





Figure 2.55 3D Views of Duplex Block Type N

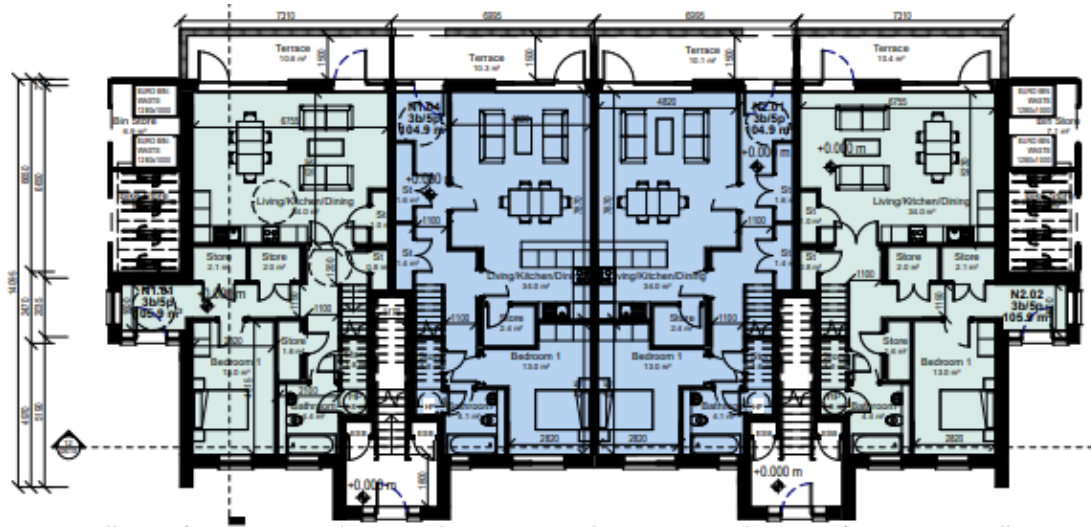


Figure 2.56 Proposed ground floor plan of Duplex Block Type N

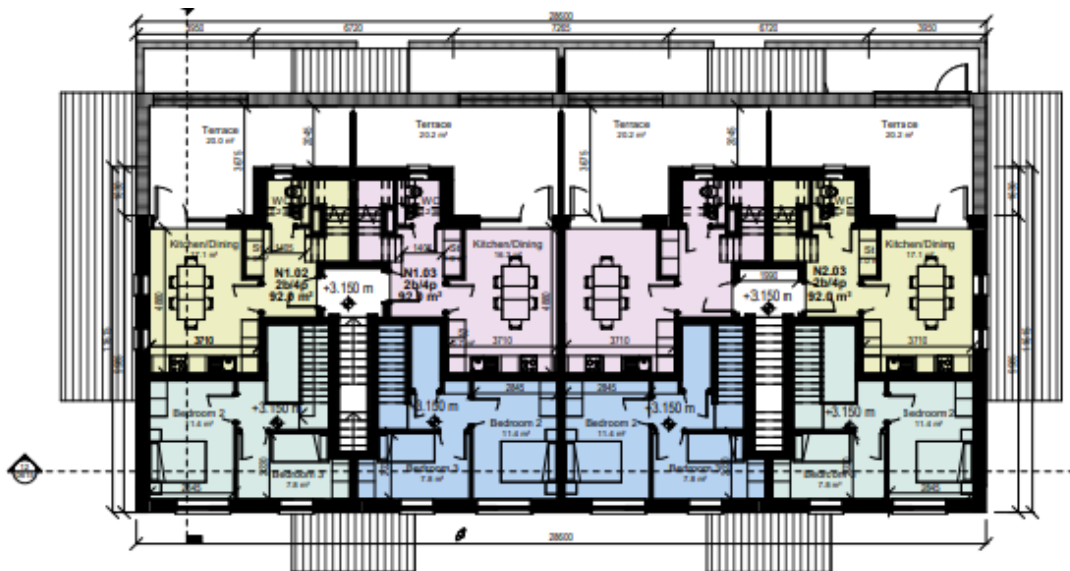


Figure 2.57 Proposed first floor plan of Duplex Block Type N

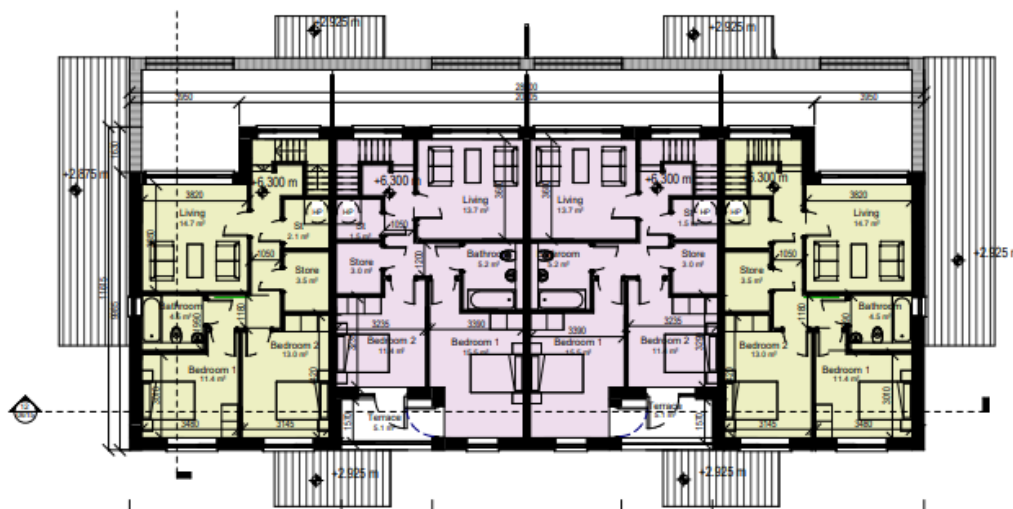


Figure 2.58 Proposed second floor plan of Duplex Block Type N

2.3.4 Proposed Dwellings

The development proposal will include the construction of 378 no. two storey family homes on the application site. The scheme caters for growing families and those trading up from apartment living, offering 2-bedroom, 3-bedroom and 4-bedroom dwellings in various configurations. The dwelling units will be categorised in 11 no. dwelling types which will be discussed in further detail below. The scale of the proposed dwellings is consistent with and complimentary to that of other recent residential developments in the vicinity of the application site and in Balbriggan.

House Type	Description	Total No. of Units
A/A1	3-Bed Semi-detached	50 no.
B/B1	3-Bed Semi-detached	50 no.
C	3-Bed Terrace	64 no.
C1	3-Bed Terrace	12 no.
D	2-Bed Terrace	127 no.
F	3-Bed Detached	5 no.
H	4-Bed Semi-detached	14 no.
J	3-Bed Semi-detached	31 no.
K	3-Bed Semi-detached	25 no.
Total No. of House Units	378 no.	

Table 2.2 Break-down of proposed house units featuring in the proposed development

The housing types are described as follows:

2.3.4.1 House-Type A-B

House A-B are three-bedroom semi-detached units, 50 no. of which feature throughout the proposed scheme. House Type A comprises a gross floor area of 109.4sqm whilst House Type B comprises a gross floor area of 108.5sq.m. Each unit has access to a rear garden space, with a minimum area of 60sq.m. At ground floor level House Types A and B comprise a kitchen/dining/living area and 2 no. bedrooms at first floor level.



Figure 2.59 3D views of House Type A-B



Figure 2.60 Proposed ground (left) first (middle) and roof (right) plans of House Type A-B.

2.3.4.2 House-Type A1-B1

House A1-B1 are three-bedroom semi-detached units, 50 no. of which feature throughout the proposed scheme. House Type A1 comprises a gross floor area of 129.2sqm whilst House Type B1 comprises a gross floor area of 127.2sq.m. Each unit has access to a rear garden space, with a minimum area of 60sq.m. At ground floor level House Types A1 and B1 comprise a kitchen/dining/living area, 2 no. bedrooms at first floor level and 1 no. bedroom at second floor level.



Figure 2.61 Proposed 3D views of House Type A1-B1



Figure 2.62 Proposed ground (left) first (middle) and second (right) floor plans of House Type A1-B1

2.3.4.3 House-Type C

There are 64 no. House Type C dwellings located throughout the scheme. The units are two-storey, 3-bedroom, terraced dwellings within the development. This house type has a gross floor area of 104sq.m and comprises a living room, shared kitchen/dining room, storage and WC at ground floor level, three bedrooms including one en-suite bedrooms, family bathroom and storage at first floor level.

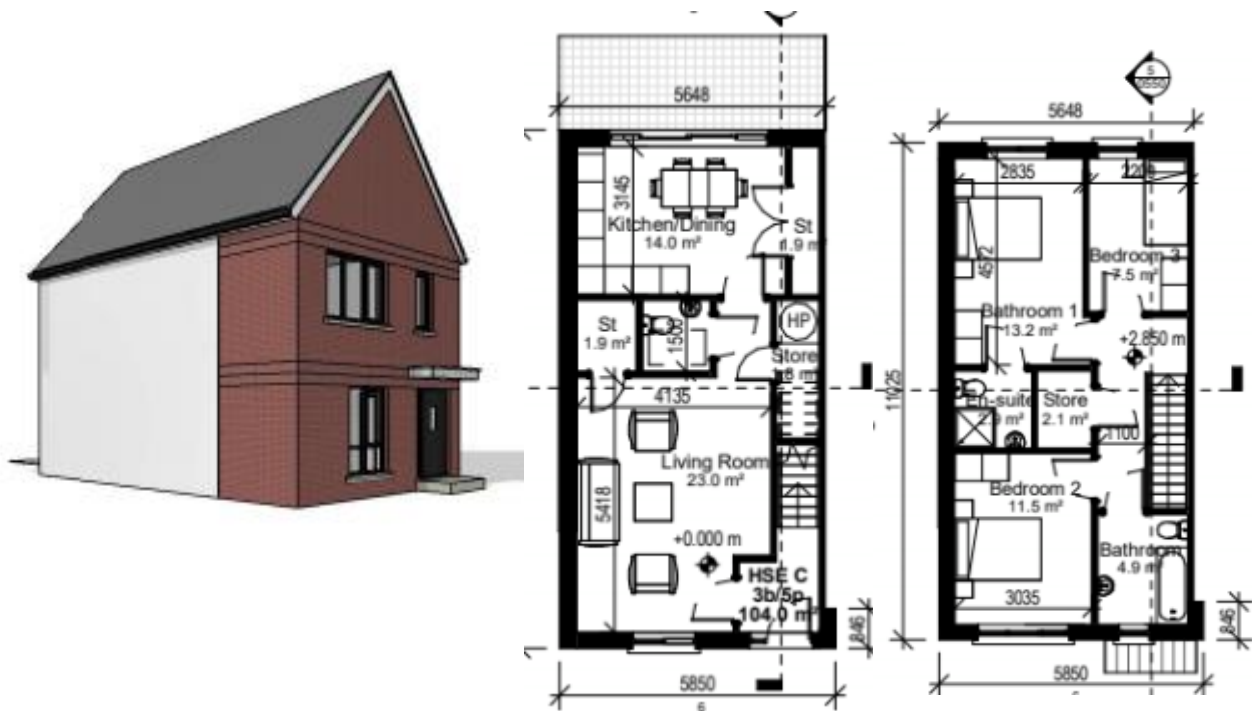


Figure 2.63 Front elevation and Proposed Ground and First Floor Plan of House Type C.

2.3.4.4 House-Type C1

There are 12 no. House Type C1 dwellings located throughout the scheme. The units are two-storey, 3-bedroom, terraced dwellings within the development. This house type has a gross floor area of 104.7sq.m and comprises a living room, shared kitchen/dining room, 2 no. storage rooms and WC at ground floor level and three bedrooms including an en-suite bedroom at and storage first floor level.

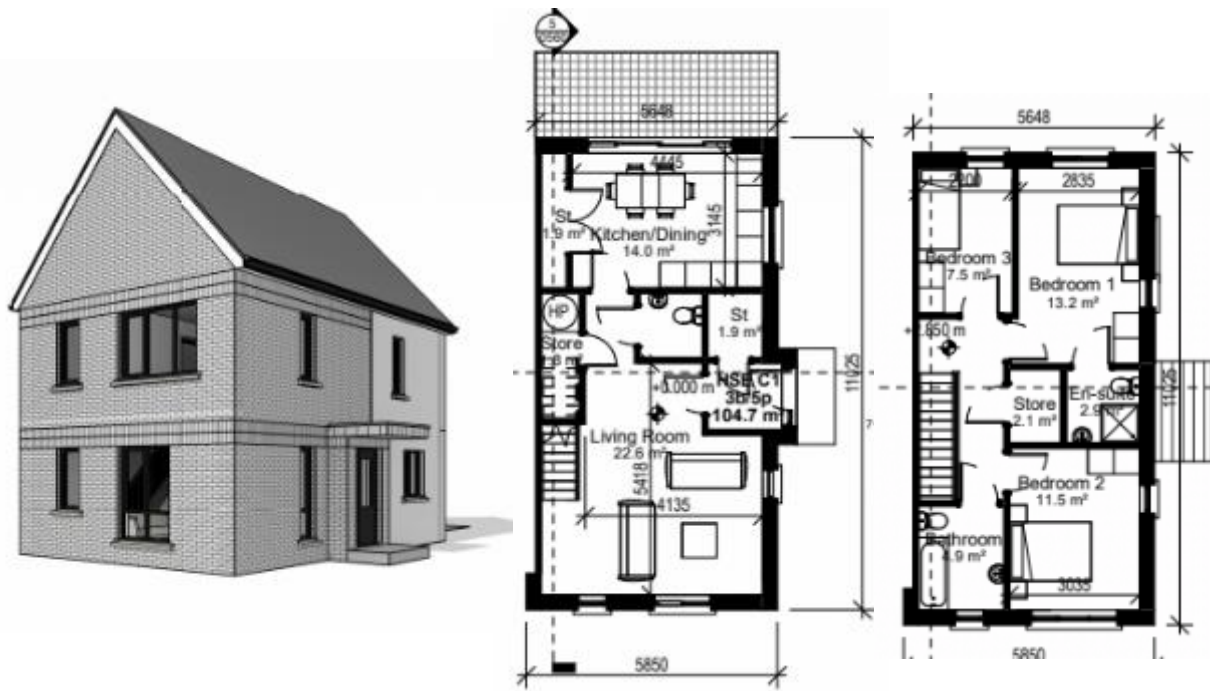


Figure 2.64 Front elevation and Proposed Ground and First Floor Plan of House Type C1.

2.3.4.5 House-Type D

There are 127 no. House Type D dwellings located throughout the scheme. The units are two-storey, 2-bedroom, terraced dwellings within the development. This house type has a gross floor area of 84sq.m and comprises a living room, shared kitchen/dining room, store and WC at ground floor and two bedrooms and a family bathroom at first floor level, including 1 no. bedroom with en-suite bathroom.



Figure 2.65 Front elevation and Proposed Ground and First Floor Plan of House Type D.

2.3.4.6 *House-Type F*

House-Type F makes up 5 no. two-storey, 3-bedroom, detached dwellings within the development. This house type has a gross floor area of 113.8sq.m and comprises an entrance hall, living room, shared kitchen/dining room, storage and WC at ground floor and three no. bedrooms, an en-suite master bedroom, family bathroom and 2 no. storage rooms at first floor level. There are 2 types of material finishes proposed for House Type F; HS and HC, depending on which character area they are located within.



Figure 2.66 3D views of House Type F (Hampton South Character Area)



Figure 2.67 3D views of House Type F (Hampton Central Character Area)

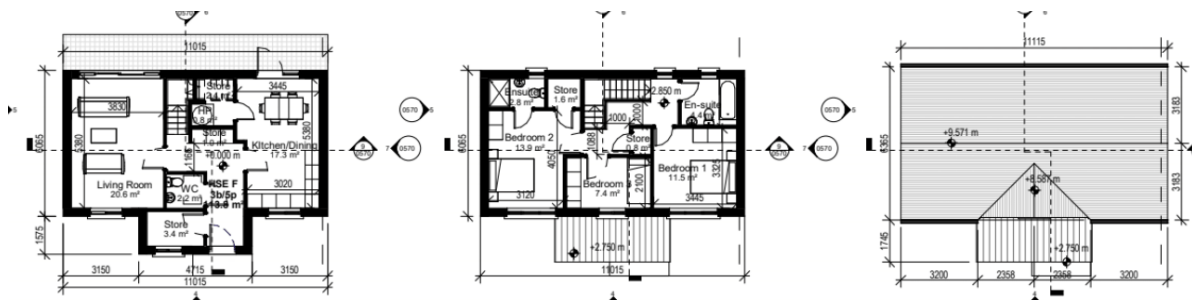


Figure 2.68. Ground (left) first (middle) and roof (right) plans of House Type F

2.3.4.7 House-Type H

There are 14 no. House Type H dwellings proposed throughout the scheme. These units are two-storey, 4-bedroom, semi-detached dwellings within the development. This house type has a gross floor area of 118.7sq.m and comprises an entrance hall, living room, shared kitchen/dining room, storage and WC at ground floor and four no. bedrooms, including an en-suite master bedroom and family bathroom at first floor level.



Figure 2.69 3D views of House Type H

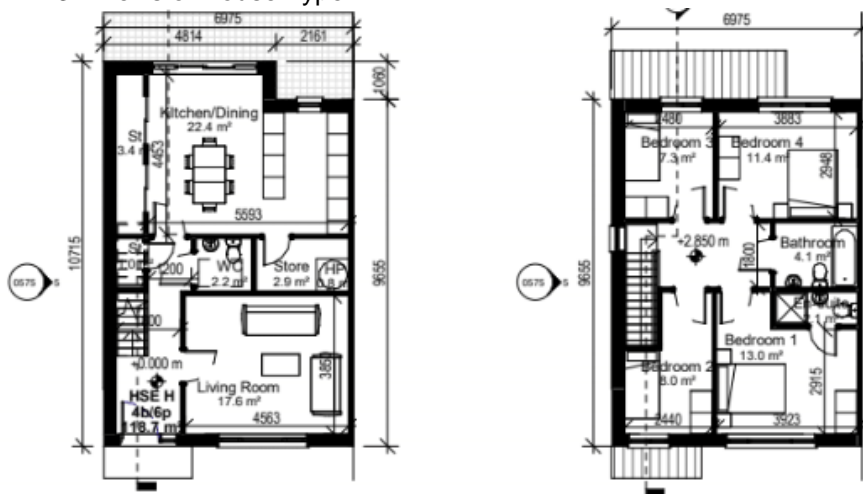


Figure 2.70 Proposed ground and first floor plans of House Type H

2.3.4.8 House-Type J

House-Type J comprises 31 no. two-storey, 3-bedroom, semi-detached dwellings within the development. This house type has a gross floor area of 106sq.m and comprises an entrance hall, living room, shared kitchen/dining room, storage and WC at ground floor, three bedrooms including an en-suite master bedroom with built-in storage, family bathroom and storage rooms at first floor level. There are 3 types of material finishes proposed for House Type J; HN, HS and TL, depending on which character area they are located within.



Figure 2.71 3D Images of House Type H – HN (Hampton North – left) (HS – Hampton South – right) and TL.(Tanner Lane – bottom)

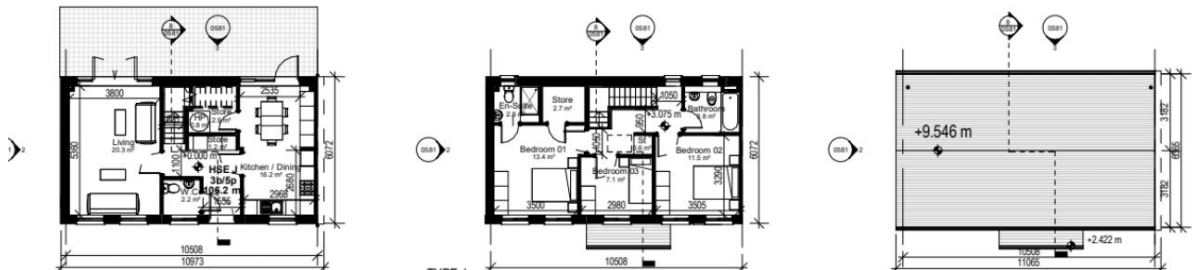


Figure 2.72 Proposed ground (left) first (middle) and roof (right) plans of House Type N.

2.3.4.9 *House-Type K*

House-Type K makes up 25 no. two-storey, 3-bedroom, semi-detached dwellings within the development. This house type has a gross floor area of 113.8sq.m and comprises an entrance hall, living room, shared kitchen/dining room, storage and WC at ground floor, three bedrooms including an en-suite master bedroom, family bathroom and storage rooms at first floor level. . There are 3 types of material finishes proposed for House Type J; HS, HN and TL, depending on which they are located within.



Figure 2.73 3D Images of House Type H – HS (Hampton South -left), HN (Hampton North – right) and TL (Tanners Lane – bottom).

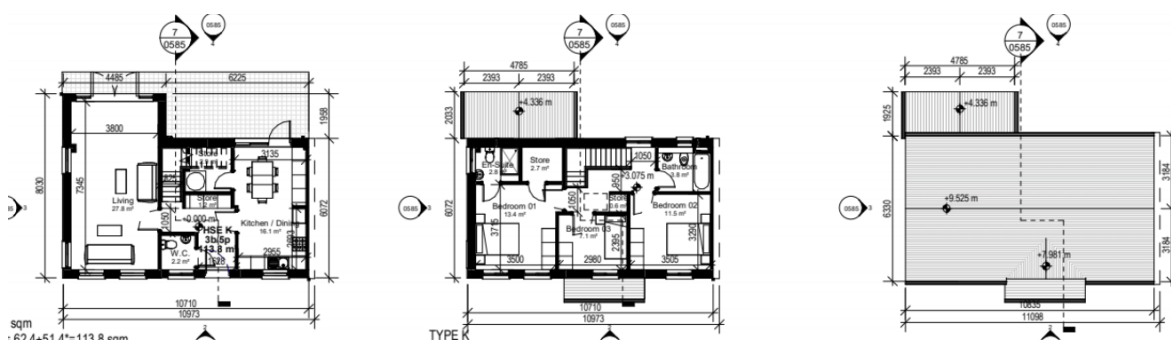


Figure 2.74 Proposed ground (left) first (middle) and roof (right) plans of House Type N.

House-Types A, B, A1, B1, C, C1, D, F, H, J and K will contain a sizeable rear garden which meets the standard requirements as outlined in the Fingal Development Plan. The units will be finished with high quality materials including brickwork and rendered finish to external walls and selected slate/tile finish to roof, the details of which are contained on the submitted design drawings (please refer to each House-Type drawing for further clarity).

2.3.5 Proposed Creche Units

As referenced above, the proposed development also includes for the provision of 3 no. Creche Units on site, 1 no. within the Flemington Park Character Area (379sq.m), 1 no. within the Hampton Park Central Character Area (354sq.m) and 1 no. within the Hampton North Character Area (494.6sq.m). The proposed creche within the Hampton Central Character Area includes an external open play area of 165.3sq.m, and is served by 3 no. staff car parking spaces, 3 no. visitor parking spaces and 3 no. set-down spaces.



Figure 2.75 3D view and plan extract of the proposed Hampton Central Creche

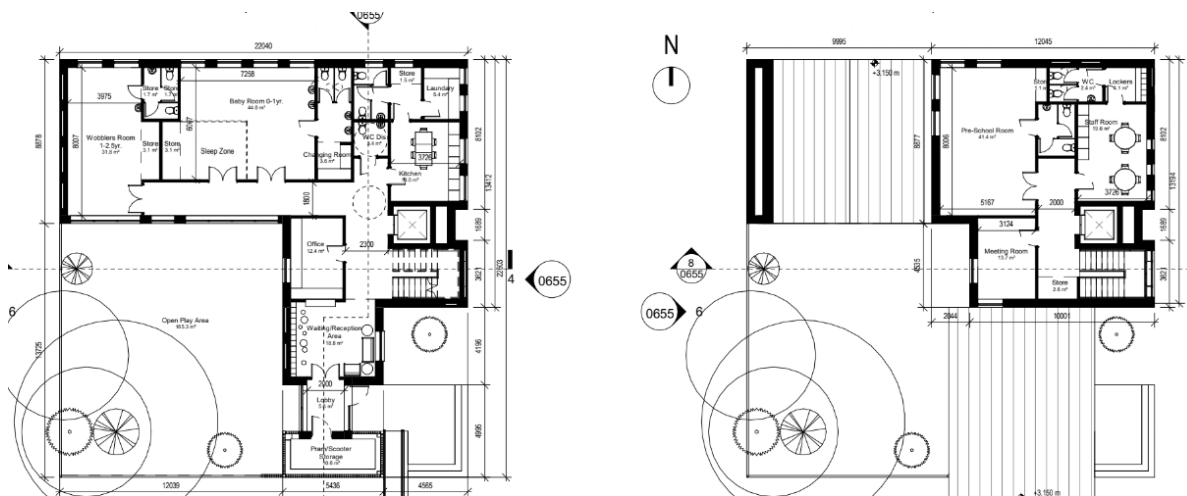


Figure 2.76 Ground (left) and first (right) floor plans of the proposed Hampton Central Creche unit.

The proposed Hampton Central Creche includes an external play area measuring c. 186.2sq.m and is served by 2 no. staff parking spaces, 1 no. visitor parking space, 1 no. accessible parking spaces and 3 no. set-down spaces.

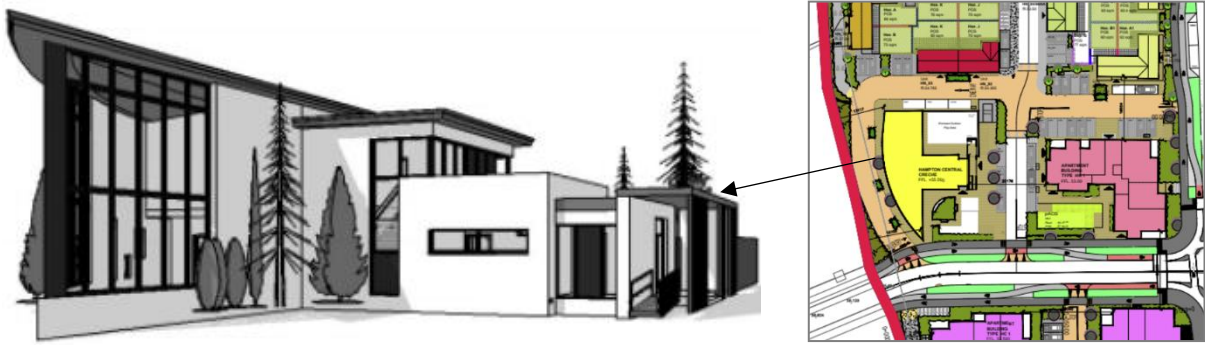


Figure 2.77 3D view and plan extract of the proposed Hampton North Creche.

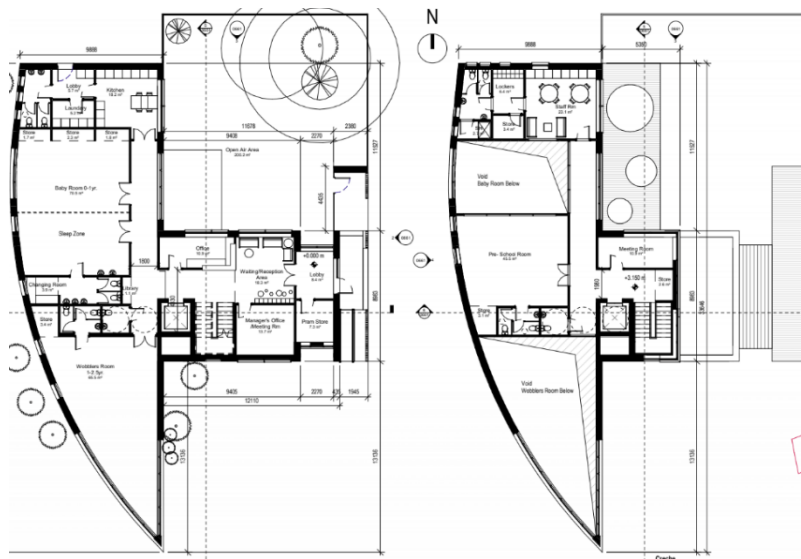


Figure 2.78 Ground (left) and first (right) floor plans of the proposed Hampton North Creche unit.

The proposed Flemington Park Creche, located within the northern portion of the subject site, comprises an external play area of 171.5sq.m, is served by 2 no. staff parking spaces, 5 no. visitor parking spaces, and 3 no. set-down parking spaces.



Figure 2.79 3D view and plan extract of the proposed Flemington Park Creche.

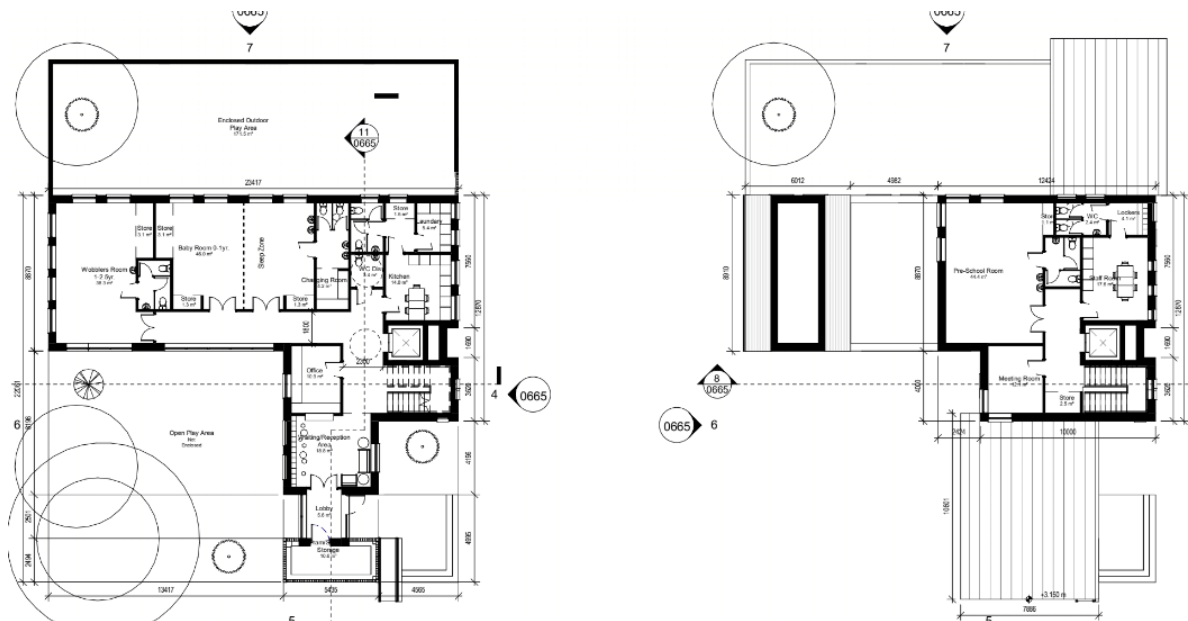


Figure 2.80 Ground (left) and first (right) floor plans of the proposed Flemington Park Creche unit.

It is submitted that the proposed 3 no. creche units provided on-site and the size of same, are sufficient to cater for the requirements of future residents of the scheme. Moreover, these units are appropriately located throughout the scheme with frontage to adjacent roadways.

Please also refer to the Design Statement and architectural drawing set, prepared by Ferreira Architects, and the Landscape Strategy & Design Report and landscape drawing set, prepared by IS Design, for further information regarding the above.

2.3.6 Access and Car/Bicycle Parking

The proposed development includes a total of 927 no. spaces, 806 no. of which are resident parking spaces, 94 no. of which are visitor parking spaces, 11 no. of which are accessible parking spaces, 7 no. spaces which are allocated to the proposed creche units, and 9 no. set down spaces.

The car parking provision for the proposed development will be formulated by considering the urban location of the subject site, which is served by an established public transport network. The subject site is located within a significant settlement within Fingal, is well served by public transport (rail and bus services) and pedestrian and cyclist connectivity. The development plan also includes policies and objectives to encourage the use of public transport and to limit the proliferation of the private car and it is considered that the proposed development is consistent with these. It is considered that the 927 car parking spaces (including set down spaces) is sufficient to serve the proposal. Additional bicycle and motorcycle parking spaces have also been provided.

The proposed development includes a total provision of 2,014 no. bicycle spaces, this is inclusive of 1,326 no. residential spaces, 640 no. visitor spaces and 48 no. spaces to serve the proposed creche units. Whilst this deviates slightly from the above requirements, it does not include the bicycle spaces that are provided for detached or semi-detached units within the rear garden space. Overall, it is considered that this provision is entirely adequate to serve the proposed development. For further details on the proposed bicycle parking provision, please refer to the Traffic and Transport Assessment and Mobility Management Plan as prepared by MPA Consulting Engineers, in support of this application.

2.3.7 Open Space and Landscaping

As illustrated in the proposed site layout plan and the character area plans, as prepared by Ferreira Architects in support of this application, greenspaces in the form of pocket parks have been included throughout the proposed development, with Class 1 open space being provided to the west of the site, Class 2 public open space being provided at various locations throughout the site, and communal open

spaces being provided to serve the proposed duplex and apartment units. The proposed Class 1 Public Open Space area is located to the west of the site and comprises an overall area of c. 2.86ha and will accommodate a new sports pitch. This proposed open space area is illustrated in the Landscape Design Drawing below as prepared by IS Design Landscape Architects. The positioning of this pitch has been revised slightly to ensure that an existing archaeological feature can be maintained in-situ.



Figure 2.81 Extract from the Landscape Design Drawings as prepared by IS Design Landscape Architects, showing the proposed Class 1 Public Open Space Area.

We also include a drawing extract below as prepared by IS Design Landscape Architects, which shows the proposed Class 2 Public Open Space areas throughout the scheme. In terms of their useability, we would firstly note that each of the spaces ranges in size from 560sq.m to 10,671sq.m which is significant enough to provide a good level of amenity for future residents and visitors of the scheme. 6 no. Play Areas are also provided throughout the site (Play area A – 200sq.m, Play area B – 400sq.m, Play area C – 100sq.m, Play area D – 100sq.m, Play area E – 400sq.m, Play area F – 100sq.m).

With regards to Public Open Space delivery in the surrounding area, we consider it prudent at this juncture to also note that our clients, Dean Swift Property Holdings have already delivered a large section of Class 1 Open Space within the north-West Balbriggan landbank. This area of Open Space is outlined in blue on the map extract below:

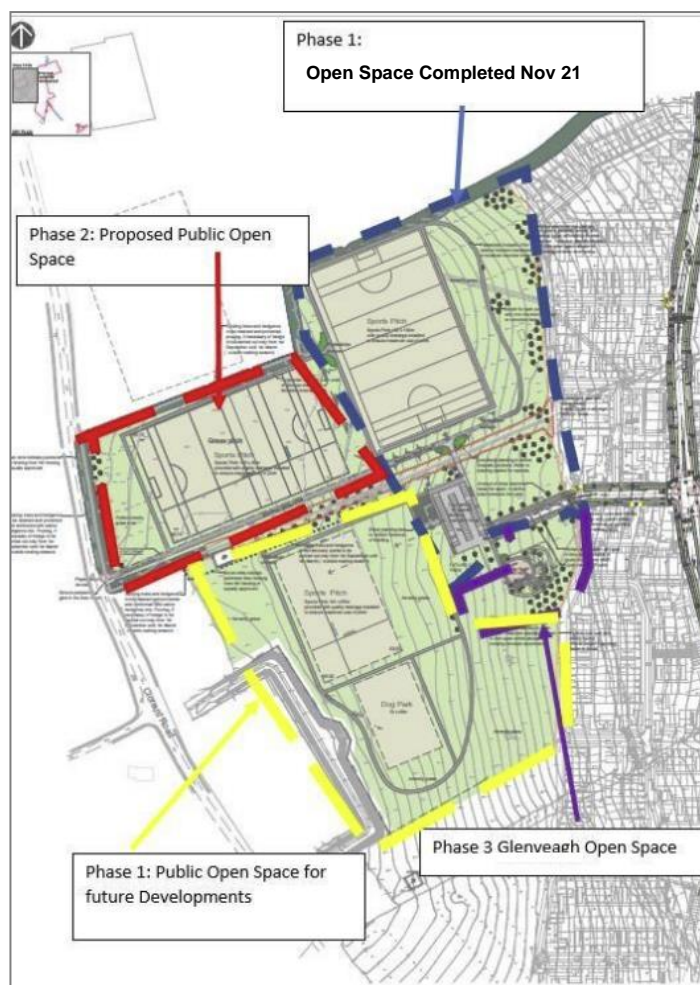


Figure 2.82 Drawing mark-up showing the Class 1 Public Open Space area which has been delivered (outlined in blue) by our clients to date.

The Class 1 Park, outlined in blue above, was completed in November 2021 and 1 year was recommended by Fingal County Council to let the park and pitch grow. Dean Swift met with Fingal County Council in late 2022 in relation to starting the taking in charge process. In this regard, legal documents have been sent to Fingal County Council by our client, in May 2023 and comments are awaited from the Planning Authority’s legal team.

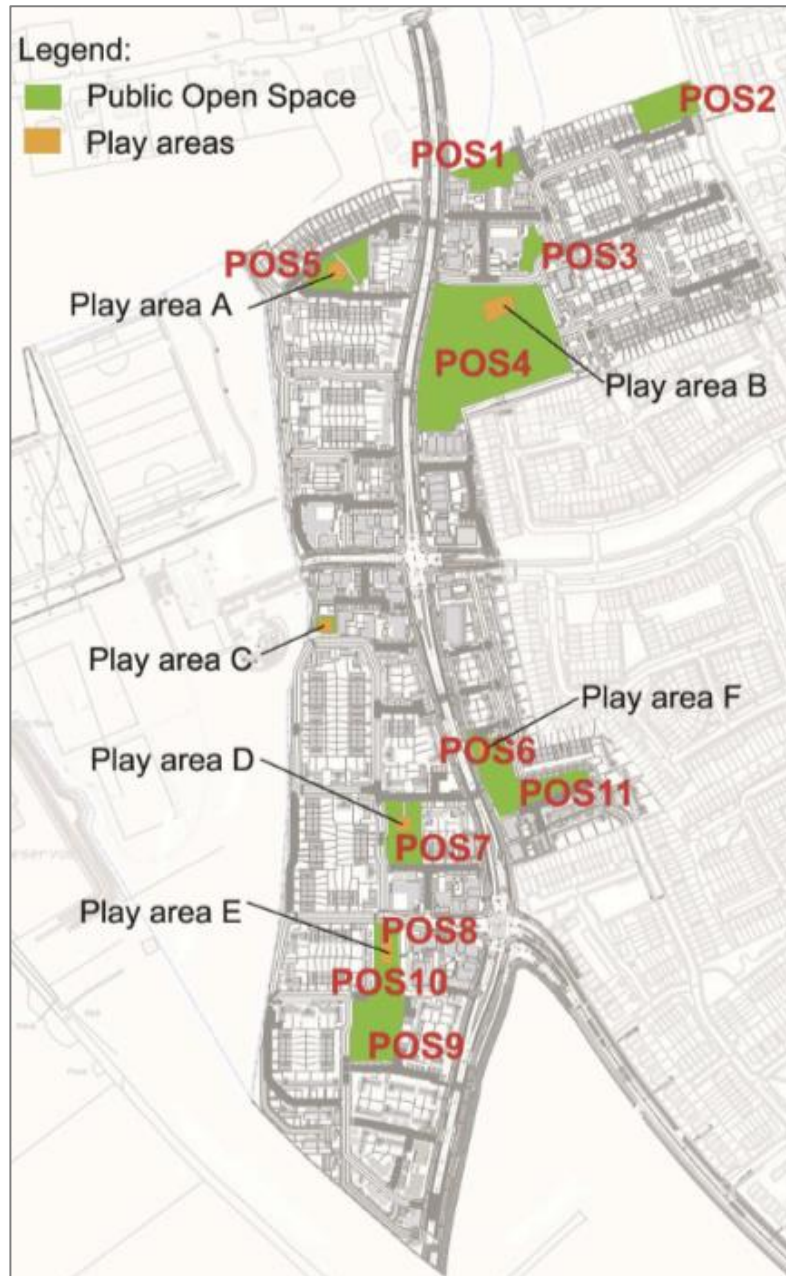


Figure 2.83 Drawing extract as prepared by IS Design Landscape Architects showing the proposed Class 2 POS areas throughout the site.

With regards to the overall quantum of public open space proposed, the Class 2 and Class 1 Open space areas equate to an overall provision of 5.1 hectares as outlined in the table below:

Proposed Public Open Space Provision	
POS	Area
Class 1 POS	
Grass Pitch	2.86 ha
Total Class 1 POS	2.86 ha
Class 2 POS	
POS 1	1,172sq.m
POS 2	1,376sq.m
POS 3	560q.m
POS 4	10,671sq.m

POS 5	1,450sq.m
POS 6	1,621sq.m
POS 7	1,483sq.m
POS 8	608sq.m
POS 9	2,013sq.m
POS 10	736sq.m
POS 11	938sq.m
Total Class 2 POS	22,682sq.m (2.268 ha)
Total Public Open Space Provision	5.1hectares
% Of Overall Site Area (5.1ha / 22.62ha)	c. 23%
% Of Residential Total Residential Area (5.1ha / 19.28ha)	c. 27%
Total POS Provision = 5.1ha (100%)	
Class 1 – 2.86ha = 56%	Class 2 – 2.268 ha = 44%

Public Open Space Calculation by Population (Objective DMS051)				
Dwelling Type	No. of Dwellings	Occupancy Role	Calculation	Total Occupancy
3+ bed dwellings	277	3.5 persons	277 X 3.5	969.5
1 or 2-bed dwellings	287	1.5 persons	287 X 1.5	430.5
Total	554			1,400
Required Open Space Area based on 2.5 hectares per 1,000 population	1,400 x 2.5 = 3,500 / 1,000 = 3.5ha Total			
	Required Class 1 (75%) = 2.625ha Class 1 Required On Site			
	Provided Class 1 = 2.86ha			
	Required Class 2 (25%) = 0.875ha Class 2 Required On Site			
	Provided Class 2 = 2.268ha			

In accordance with the tables above, the proposed public open space provision on site (5.1ha total) complies with the 15% requirement for greenfield sites and the overall standards of 2.5 hectares per 1000 population as per Table 14.12 of the Fingal Development Plan. On the basis of the above, the quantum of public open space provided should be considered sufficient by the Planning Authority.

2.3.8 Roads and Infrastructure

As is clear from the proposed development drawings, the current application will include the construction of a significant section of the Flemington Link Road (formerly known as the C Ring Road), which will run in a north-south direction through the central section of the site. The Flemington Link Road/C-Ring is a long standing objective of the Fingal County Development Plan as part of the development of the lands at North-West Balbriggan. The proposed alignment of the road runs in a north-south direction from Flemington Lane (north) to the Naul Road Roundabout (south).

As part of this application, permission is also sought for the provision of a series of connected cycle and pedestrian routes as well as a number of shared surface zones. For full details on the proposed transport provision, bicycle parking and car parking on site, please consult the Engineering Drawings and Traffic and Transport Assessment as prepared by Martin Peters and Associates Consulting Engineers for full details in this regard.

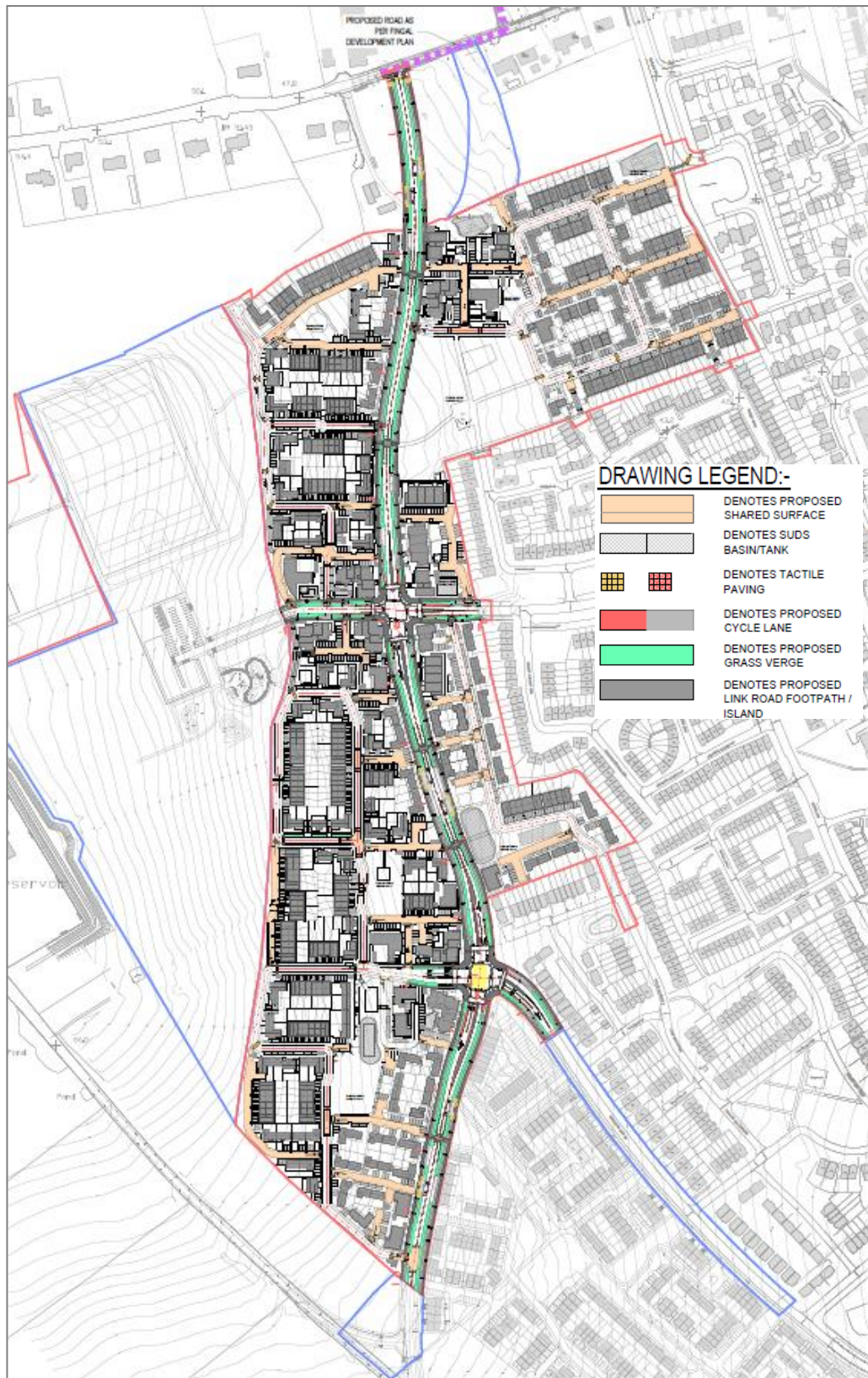


Figure 2.84 Extract from the site plan as prepared by MPA Consulting Engineers, showing the transport infrastructure on-site.



Figure 2.85 CGI view of the proposed shared surface zones within the proposed residential scheme.



Figure 2.86 CGI view of the proposed shared surface zones within the proposed residential scheme.

The proposed link road results in an access route to serve all units within the proposed development. It is also noted that the Boulevard is constructed and operational with the redline proposed only around areas where connections are proposed to same. A Traffic Impact Assessment has been prepared by MPA Consulting Engineers which assesses the local area and which demonstrates that the proposed development and surrounding lands and this has concluded that the with the phased development of the site and the associated new road infrastructure and connections, along with the provision of a new

upgraded junction at Boulevard Road and the R122 Naul Road, the existing and proposed network has sufficient capacity for the development proposed with some mitigation and upgrades works required on the existing network. Please refer to the enclosed engineering documentation for further details.

The development also includes foul and surface water drainage, landscaping works to areas of public open space and boundary treatments to the site. It is important to note that phase 1 of the construction of the park is almost complete and the proposed development comprises phase 2 of the park and will be delivered on site as part of the proposed development.

The proposed development includes a total of 927 car parking spaces including set down spaces, which are provided throughout the proposed development comprising 811 spaces for the residential units, 89 visitor spaces, 11 mobility access spaces, 7 spaces allocated for the creche and 9 set down spaces. A total of 2,014 bikes spaces are also proposed.

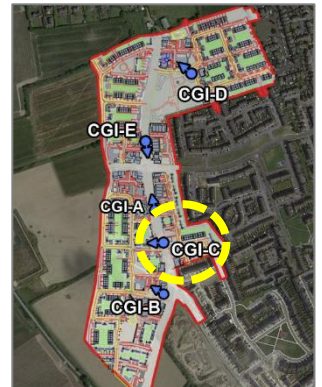


Figure 2.87 CGI view looking west from the proposed Link Road (CGI C).

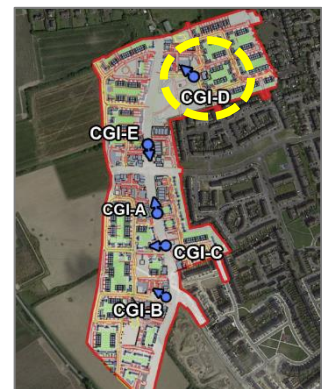


Figure 2.88 CGI view looking north-west to the apartment and creche buildings within the Flemington Park Character Area.

Overall, it is submitted that the proposed development is appropriate in relation to its context and will enhance the visual amenity of the surrounding area through the incorporation of a high-quality, innovative and contemporary design, which provides for the more efficient use of zoned and serviced lands, which have been earmarked for development for a number of years. The proposed development on site provides a unique opportunity to enhance the overall density of the site within an appropriate location, and to promote consolidation and compact growth in accordance with the aims and objectives as set out within the National Planning Framework (NPF) and the Regional Spatial and Economic

Strategy for the Eastern and Midlands Region (RSES). Furthermore, it is considered that the proposal will significantly enhance the vitality of the area, whilst also providing much needed residential accommodation within the north Dublin region.

Please also refer to the Architectural Design Statement and Architectural Drawing pack, prepared by Ferreira Architects, for further details regarding the proposal. The subject application has been prepared having regard to the feedback received from Fingal County Council during the pre-planning consultation period.

2.3.9 Services and Proposed Infrastructure Works

Foul Sewer

The foul sewer has been designed in accordance with the requirements of Irish Water as set out in the Code of Practice for Wastewater Infrastructure (IW-CDS-5030-03) with an allowance of 450l/house per day and a peaking factor of 6 x Dry Weather Flow. The drawings included with this submission show the proposed Foul Sewer Layout (Drawing No. 191004/C/007.0–007.5) and the Proposed Foul Sewer Longitudinal Sections (191004/C/020–024). The proposed system consists of gravity sewers on the site which convey all the effluent from the proposed development to the existing Irish Water wastewater drainage infrastructure that surrounds the site. 3.1.4 A total of 6 no. connection points are proposed, these are shown on drawing 191004/C007.0, 5 no. connections are direct to IW infrastructure and 1 no. is via an adjacent estate (Taylors hill by Glenveagh), a letter of consent is included with this submission.

Water Supply

The water supplies will be provided via a number of connections to the existing potable water supply mains located on and around the site as shown on Drawing 191004/C/009.0–9.5. The proposed watermain has been designed to Irish Water Standards. A confirmation of feasibility (COF) statement of design acceptance (SODA) has been received from Irish Water.

Road/Junction Upgrades

The primary vehicular accesses will be provided off Flemington Lane and Clonard Road via newly created vehicular entrances. These entrances will also provide access to 927 car parking spaces including set down spaces, comprising 811 spaces for the residential units, 89 visitor spaces, 11 mobility access spaces, 7 spaces allocated for the creche and 9 set down spaces. A total of 2,014 bikes spaces are proposed and 36 no. motorcycle spaces.

The proposed development also includes streetscape upgrades along Clonard Road, with footpaths, cycle lanes and landscaping also proposed internally within the application site.

Please refer to Chapter 13 of this EIAR and the Transportation Assessment Report, prepared by MPA Consulting Engineers, for further information.

2.3.6 Phasing of Development

As illustrated in the Phasing Plan (Drawing No. 1902-SITE-0517) has been prepared by Ferreira Architects to accompany this application. The proposal comprises 5 no. Character Areas to be constructed under 4 no. phases as follows.

Phase 1 – Hampton Central				
Unit Type	1 -bed	2-bed	3-bed	4-bed
Houses		36	52	
Duplexes	2	9	7	
Apartments	17	19		
Total	19	64	59	142

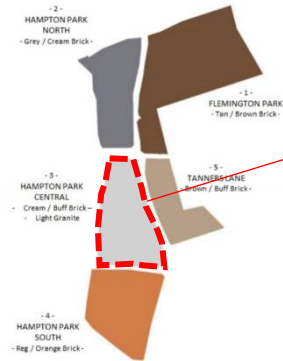


Figure 2.89 Phase 1 – Hampton Central

Phase 2 – Hampton South				
Unit Type	1 -bed	2-bed	3-bed	4-bed
Houses		16	55	
Duplexes	5	9	4	
Apartments	6	8		
Total	11	33	59	103

Phase 2A – Tanners Lane				
Unit Type	1 -bed	2-bed	3-bed	4-bed
Houses		6	30	
Duplexes	1	6	5	
Apartments		6		
Total	1	18	35	54

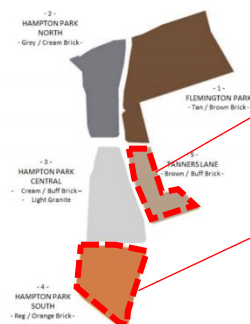


Figure 2.90 Phase 2 – Hampton South, Tanners Lane and Class 1 Open Space

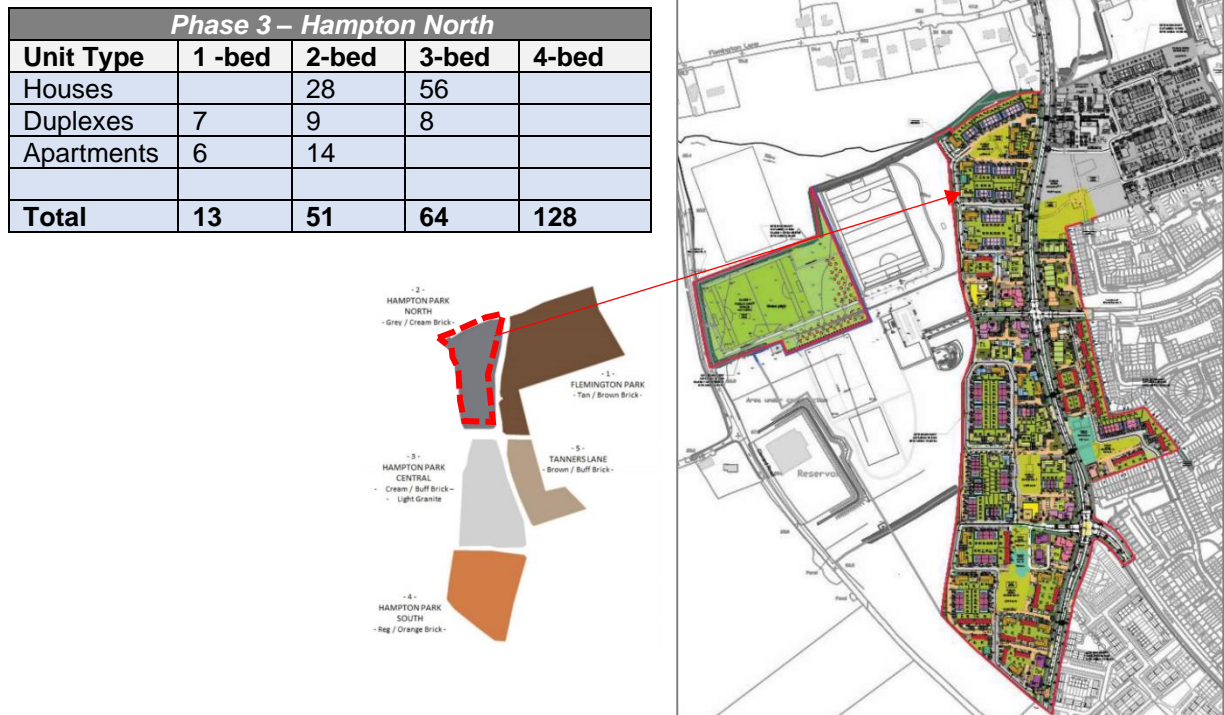


Figure 2.91 Phase 3 – Hampton North

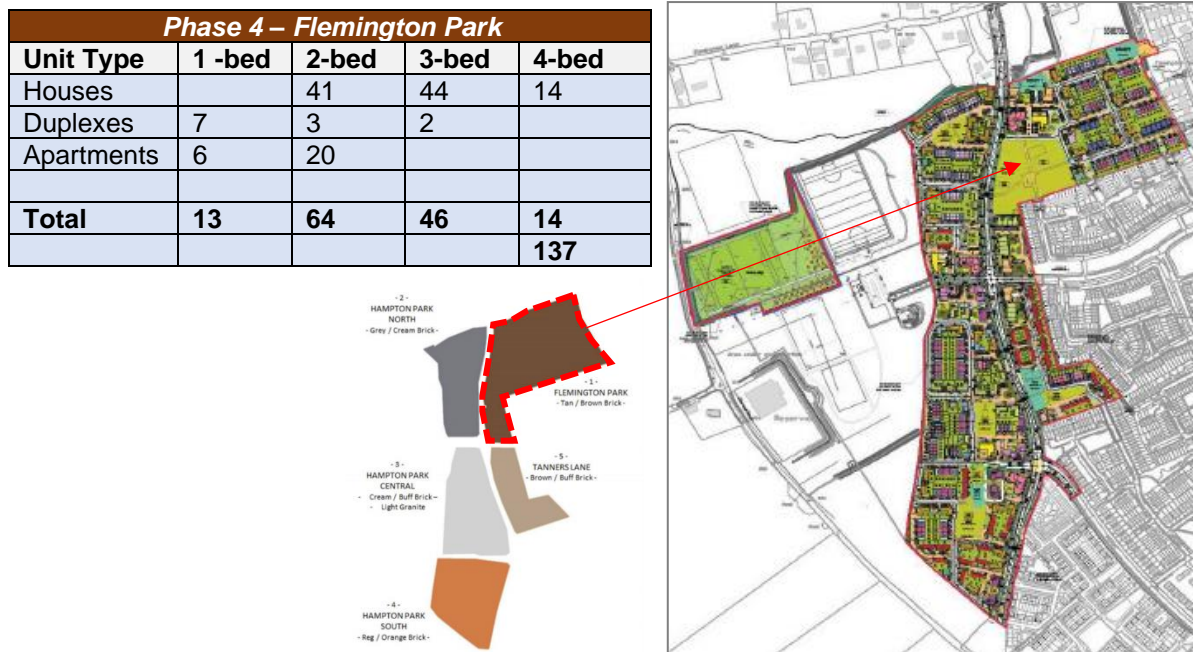


Figure 2.92 Phase 4 – Flemington Park

2.4 Alternatives Examined

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.’

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 describe alternatives as follows:-

“(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.”

Reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects to be presented in the EIAR.

This chapter provides an outline of the main alternatives examined during the design phase. It sets out the main reasons for choosing the development as proposed, taking into account and providing a comparison on the environmental effects. For the purposes of the Regulations, alternatives may be described at three levels:

- i. Alternative Locations
- ii. Alternative Designs
- iii. Alternative Processes

2.4.1 Alternative Locations

Given the zoning of the subject site in the Fingal Development Plan 2023-2029, and having regard to the project’s objectives, no reasonable alternative locations were considered. The rationale for the subject project is to provide a residential development with ancillary facilities in a landscaped setting on Residential Zoned lands in close proximity to Balbriggan Town Centre.

The proposal is predicated on the zoning applying to the majority of the site for residential development in the Fingal Development Plan 2023-2029, whereby new residential development is envisaged. It is within this statutory planning policy context that all alternatives have been considered.

It is also noted that from an environmental perspective, the lands subject to this assessment are appropriate for redevelopment and can accommodate the proposed development of 564 no. residential units, 3 no. creche and 9 no. commercial units noting that from the perspective of population and human health, there is a shortage of supply of housing and demand in this area; that there is good transport links compared to other sites; there is no river nearby or other ecological/environmental sensitivity onsite as set out in the Appropriate Assessment, that the proposal represents an improvement to the neighbourhood noting the high quality amenities proposed as part of the scheme and the visual enhancement of the proposal in the context of the existing warehouse buildings and that there will be no adverse visual impacts on adjoining development.

2.4.2 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 uses.

In this context, the proposed development which is the subject of this application comprises appropriate land uses in accordance with the proper planning and sustainable development of the area.

2.4.3 Description of Alternative Processes

Given the zoning of the subject site, and the nature of the proposed development, no reasonable alternative processes were identified. The proposed development will implement best practice

processes including sustainable construction methods as well as durable and high-quality materials within the proposed development.

2.4.4 Alternative Designs/Layouts

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

Alternative site layouts and siting progressed throughout the design process 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 paragraphs analyses alternative development options considered for the site, starting with the initial layout tabled at the 1st pre-planning meeting had with Fingal County Council on 21st May 2019 and then describing design options and changes which were incorporated into the scheme as the proposals progressed through extensive pre-application discussions with Fingal County Council and in response to input from the appointed EIAR team. The principal considerations and amendments to the design of the scheme, having regard to and comparing the key environmental issues, are set out and discussed.

Option 1 Design/Layout discussed at the Informal Pre-planning Meeting with Fingal County Council in May 2019

The first design option explored by Ferreira Architects in early 2019, which was subsequently tabled at an informal pre-planning meeting with Fingal County Council on 21st May 2019, comprised a housing layout which achieved c. 650 no. dwellings and apartment/duplex units and a creche.

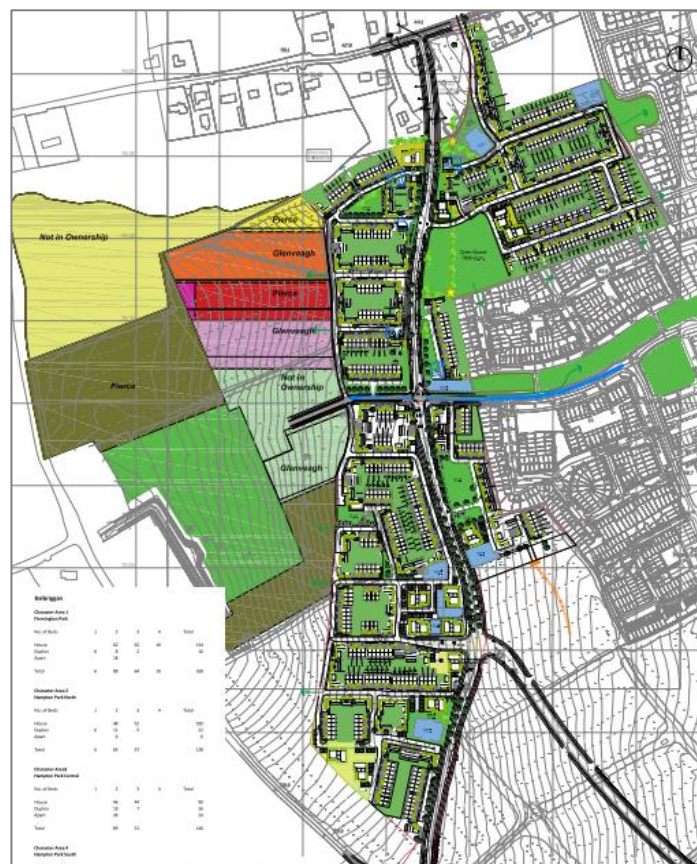


Figure 2.93 Site Layout demonstrating Option 1

Option 2 ***Design/Layout discussed at the Formal Section 247 Meeting with Fingal County Council in August 2019.***

The second design option explored by Ferreira Architects in Summer 2019, which was subsequently tabled at a formal pre-planning meeting with Fingal County Council on 7th August 2019.

The key changes made in advance of pre-application Meeting no. 2 was based on the feedback and recommendations provided at Meeting No. 1, can be summarised as follows:

- Internal road was no longer considered an orbital route, but a high-capacity urban street.
- Frontage development – front doors but no vehicles access should run off the main road running through the site. Parallel Parking off the main road was considered acceptable – use cycle track as a buffer.
 - Minimal reverse parking
 - Verges to be included
- The internal road contained the same character for the length of the proposed road, and there was no change in character at the junction with Bridgefoot Lane.
- A traffic calming scheme was introduced to include controlled crossings and junctions.
- 3 storey blocks were relocated so that they provided road frontage.
- A southern connection to Naul Road was included



Figure 2.94 Extract from Site Layout demonstrating Option 2

Option 3 ***Design/Layout discussed at the Pre-planning Consultation for a Strategic Housing Development with An Bord Pleanála on 7th December 2020***

The third design option explored by Ferreira Architects following the S247 pre-planning meeting with Fingal County Council, which was subsequently tabled at the pre-planning consultation with An Bord Pleanála on 7th December 2019.

The development tabled at this meeting comprised the construction of a mixed-use development, featuring 582 no. dwelling units, consisting of 444 no. houses; (175 no. two-bedroom houses; 257 no. three-bedroom two-storey houses and 12 no. four-bedroom houses) and 138 no. apartments (22 no. one-bedroom apartments; 85 no. two-bedroom apartments and 31 no. three-bed apartments); 2 no. crèche, 1010 no. car parking spaces and 467 no. bicycle spaces.



Figure 2.95 Site Layout demonstrating Option 3

Option 4 ***Design/Layout discussed at the Informal Pre-planning Meeting with Fingal County Council on 14th April 2021***

Following submission of a design strategy to Fingal County Council which sought to address the issues raised by the Planning Authority at the SHD Stage 2 ABP meeting on 7th December 2020, the Planning Authority indicated that the revised proposals appeared to address the concerns raised in relation to the interface with the north south road and improvements in relation to urban design and building frontage. The Planning Authority welcomed the inclusion of nodes, a public plaza and variation in use-type at nodes as well as provision of landmark buildings.

Option 5 ***Design/Layout discussed at the Informal Pre-planning Meeting with Fingal County Council in December 2021***

The fifth design option explored by Ferreira Architects following the informal pre-planning meeting with Fingal County Council, was subsequently tabled at another informal consultation in December 2021.

The development tabled at this meeting comprised the construction of 593 no. dwelling units, consisting of 393 no. houses; (154 no. two bedroom houses; 225no. three- bedroom houses and 14 no. four-bedroom houses), 92 no. duplex units (18 no. one-bedroom duplexes, 41 no. two-bedroom duplexes and 33 no. three-bedroom duplexes) and 108 no. apartments (36 no. one bedroom apartments and 72 no. two bedroom apartments), 2 no. crèche, 968 no. car parking spaces (including 9 set down spaces) and 616 no. bicycle spaces.



Figure 2.96 Site Layout demonstrating Option 5

Option 6 *Design/Layout discussed at the Informal Pre-planning Meeting with Fingal County Council on 2nd March 2022*

An informal pre-planning meeting between the applicant and the Planning and Transportation Department which discussed the further assessments the design team undertook in relation to accessing the proposed scheme. The design team submitted an upgraded junction design for Boulevard Road and Clonard Road. The junction was an upgraded junction to the currently approved Boulevard rd / Naul Rd junction (F21A/055) with a flared version of this junction to allow for filter lanes. The proposal provided for a compact junction which did not involve slip lanes and met the requirements for pedestrian and cycle facilities. The design team also tabled the left in and left out junction at Flemington Lane. The design team confirmed that the proposed scheme can be accommodated with these proposals. Fingal County Council confirmed that the proposals would be considered acceptable subject to clarification of a number of additional items.

Option 7 *Design/Layout discussed at the Formal Pre-planning Meeting with Fingal County Council on 25th March 2022*

A formal pre-planning meeting between the applicant and Fingal County Council was held. A number of further concerns were highlighted by the Council in addition to those raised at the previous meeting. It was agreed that a further s.247 meeting would be undertaken by the design team prior to progressing to the LRD meeting. The proposed development has expanded on and developed from the design strategy submitted to the Planning Authority and was subject to a pre-planning meeting request.

Option 8 *Design/Layout discussed at the Formal Section 247 Meeting with Fingal County Council in August 2022*

The second design option explored by Ferreira Architects in Summer 2019, which was subsequently tabled at a formal pre-planning meeting with Fingal County Council on 12th August 2019.

The key changes made in advance of this meeting were based on the feedback and recommendations provided at the previous meeting in March 2022, can be summarised as follows:

- Revisions to the overall layout resulting in the reduction of c. 28 units from the previously submitted;
- Creation of significant additional class 2 public open space (over 3,100 sq.m.) across the subject site with the resultant reduction in unit numbers and revisions to layout to accommodate same;
- Revisions to layout to provide increased supervision of open space;
- Provision of communal/semi-private open space for the proposed apartments and duplexes.
- Provision of high quality nodes as set out in the Design Statement enclosed with this request.
- 3 no. childcare facilities accommodating c.110 childcare places.
- Variety in house type increased with varying heights (2-4 storey) proposed within the character areas as set out in the enclosed character area and material document prepared by Ferreira Architects enclosed with this request.
- Revisions to the layout to address the n-s spine road with buildings actively fronting onto this road.
- Revisions to the internal road network to provide additional pinch points to improve the pedestrian and cyclist environment.
- Revisions to proposed parking to omit opposing perpendicular parking;
- Replacement of the proposed 50m ICD Roundabout junction at Boulevard Road / Naul Road with a signal controlled junction
- Provision of controlled crossing facilities on all arms of the new junction with all red phase every cycle for pedestrian and cyclist
- Provision of the Northern Link via a new priority controlled junction with Flemington Lane
- Provision of lands within the blue line boundary to be ceded to FCC to provide future link from Flemington ink road to Bridgefoot road

- Provision of cycle protected signal junctions at the main on-site junctions with Boulevard road and Hamlet lane.
- Tree Survey was undertaken on site and was enclosed with the request.

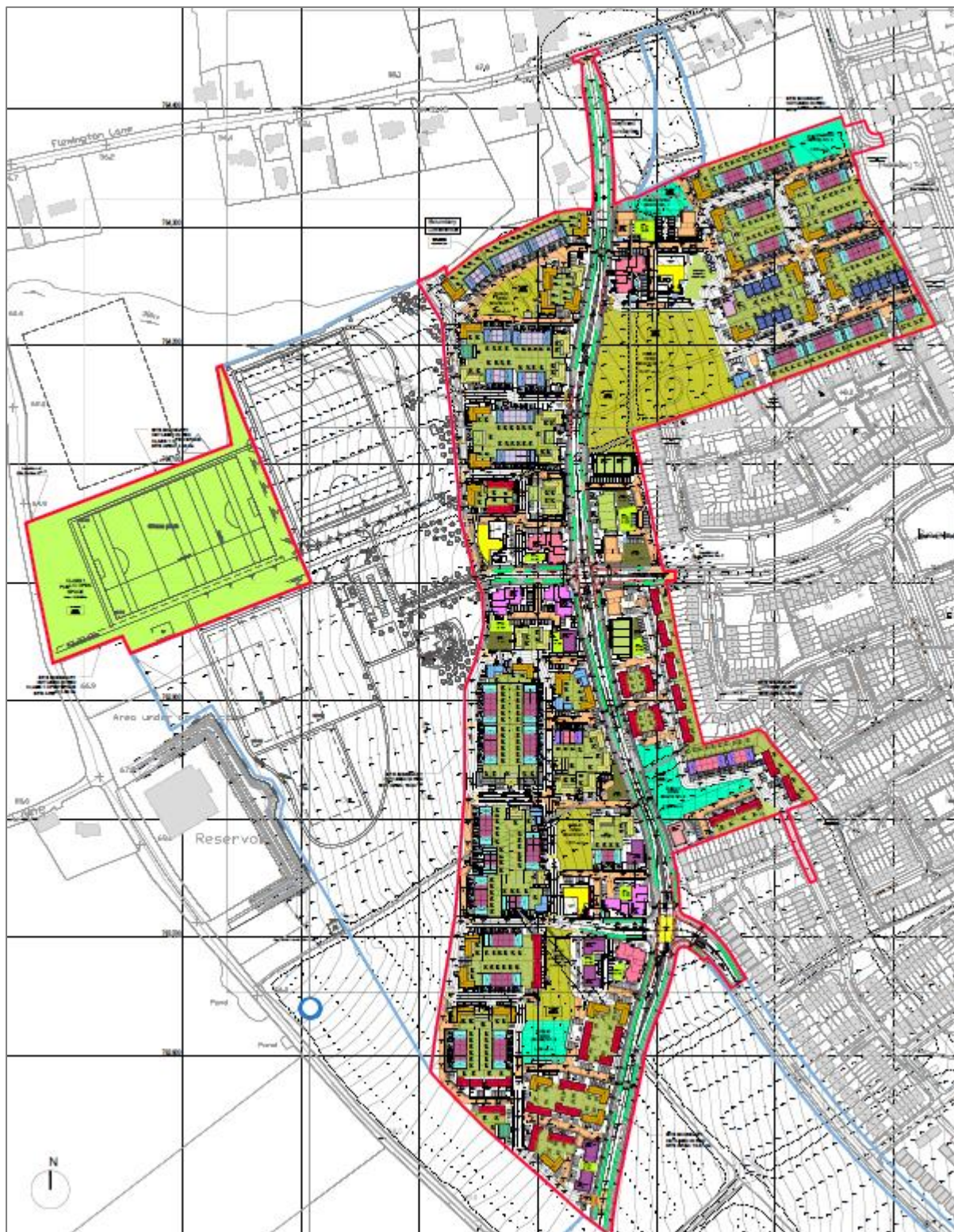


Figure 2.97 Site Layout demonstrating Option 8

Option 9 *Design/Layout discussed at the Formal Section 247 Meeting with Fingal County Council in January 2023.*

Following a number of formal and informal S. 247 meetings with Fingal County Council, a request to enter into a formal LRD pre-planning consultation meeting with the Planning Authority was submitted in accordance with Section 32B of the PDA 2000 (as amended). As above mentioned, a formal LRD Stage 2 meeting was held between the Applicant, members of the Design Team and representatives from the Planning Authority on 26th January 2023.

Following receipt of the formal pre-planning advice from August, the applicant and design team made amendments to the design of the development proposal which were incorporated into the subject application. These included the following:

- Revisions to the overall layout resulting in the reduction of c. 1 unit from the previously submitted scheme;
- Revisions to layout to provide increased supervision of open space;
- Provision of communal/semi-private open space for the proposed apartments and duplexes.
- Provision of high-quality nodes as set out in the Design Statement
- 3 no. childcare facilities accommodating c.110 childcare places.
- Variety in house type increased with varying heights (2-4 storey) proposed within the character areas as set out in the Character Area and Material Document prepared by Ferreira Architects enclosed with this request.
- Revisions to the layout to address the n-s spine road with buildings actively fronting onto this road.
- Revisions to the internal road network to provide additional pinch points to improve the pedestrian and cyclist environment.
- Replacement of the proposed 50m ICD Roundabout junction at Boulevard Road / Naul Road with a signal-controlled junction
- Provision of controlled crossing facilities on all arms of the new junction with all red phase every cycle for pedestrian and cyclist
- Provision of the Northern Link via a new priority-controlled junction with Flemington Lane
- Increased connectivity to the existing residential areas to the east and south of the proposed development.
- Provision of cycle protected signal junctions at the main on-site junctions with Boulevard road and Hamlet lane. A Cycle Parking Strategy was enclosed.
- Bicycle Stores have been relocated to within apartment buildings.
- A Social Infrastructure Audit Report was undertaken and was enclosed with the request.
- An updated Tree Survey has been undertaken on site and was enclosed with the request.

This option comprised the construction of 565 no. dwelling units, consisting of 379 no. houses; (130 no. two bedroom houses; 235no. three- bedroom houses and 14 no. four-bedroom houses), 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 102 no. apartments (35 no. one bedroom apartments and 67 no. two bedroom apartments), 3 no. childcare facilities, 10 no. commercial units and 6 no. communal units, 886 no. car parking spaces (including set down spaces) and 710 no. bicycle spaces.

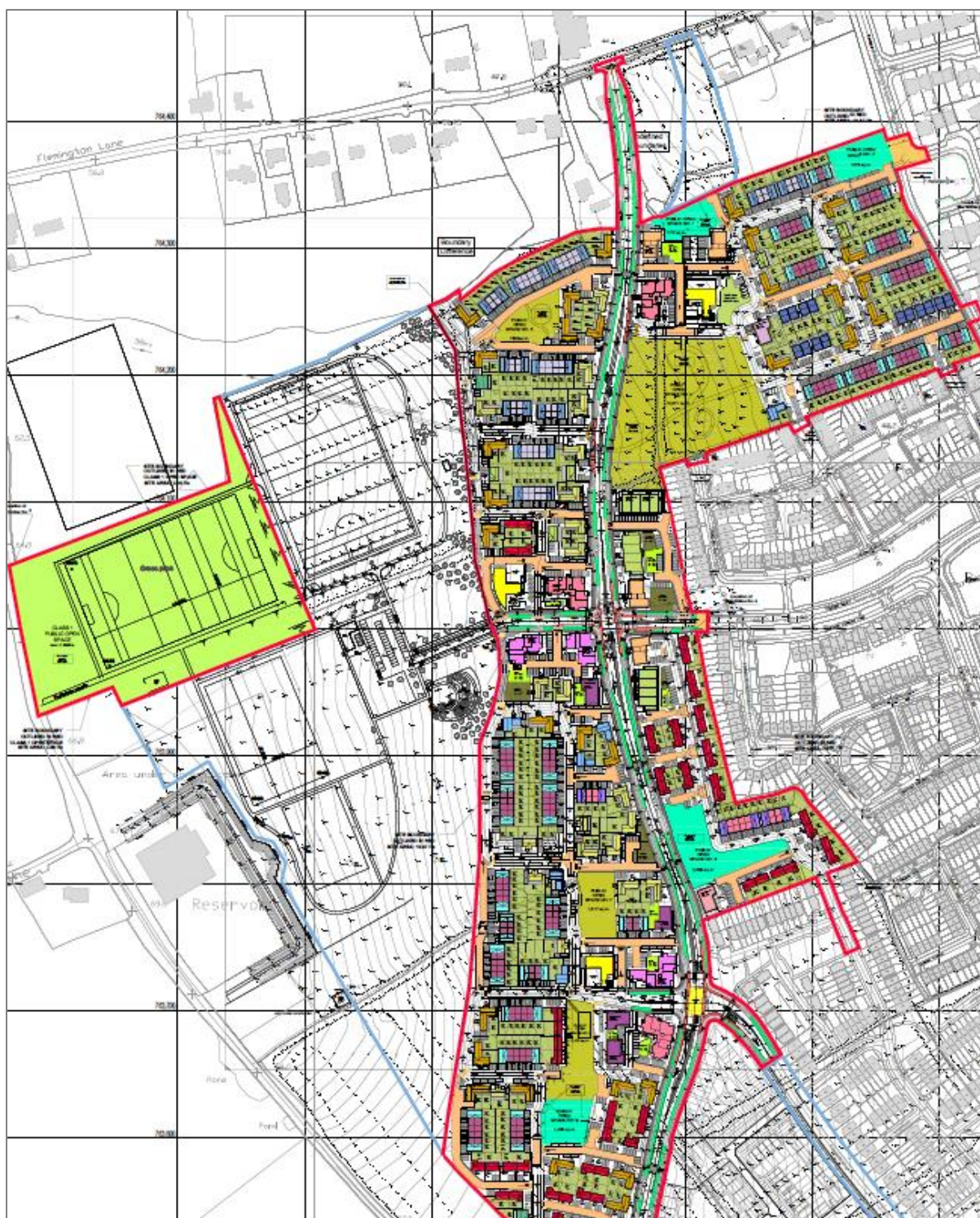


Figure 2.98 Site Layout demonstrating Option 9

Option 10 *Final Large-Scale Residential Development Scheme Submitted to Fingal County Council*

As noted above, following the receipt of detailed feedback from An Board Pleanála with regards to the SHD scheme and from Fingal County Council, during the course of pre-application consultations for the LRD process, and following receipt of the Development Opinion which advised on further consideration relating to aspects of the proposed development, the applicant and design team have made amendments to the design of the development proposal which are incorporated in the subject

application. These include: amendments regarding layout, design, open space, transport and water services issues.

A detailed assessment of the Opinion and how the current proposals address each of Fingal County Council's points is found within the 'Statement of Response to FCC Pre-Application Consultation Opinion', created by Hughes Planning & Development Consultants.

2.5 “Do Nothing” Alternative

In the event of the 'do-nothing' scenario, the current use of the site is likely to continue, whereby the lands would remain in agricultural use. A “do-nothing” scenario was considered to represent an inappropriate, unsustainable and inefficient use of these residential zoned lands. In addition, the additional demand / support for local infrastructure, services, and businesses would not be generated by any new population on the site; nor would local housing demand be catered for.

In terms of landscape and visual impact, the site would continue to have an agricultural character.

2.6 Conclusion

Having examined various reasonable alternative designs and having engaged in extensive and detailed consultations with Fingal County Council in the course of the design evolution of the current scheme, it is considered that the proposed design as set out in the subject LRD application is a preferable option both in terms of the sustainable development of the subject site and the creation of a sustainable community neighbourhood insofar as it achieves a residential and commercial development, including 564 no. built to rent units, 9 no. commercial units and 3 no. childcare facilities achieving a net residential density of 35.1 units per hectare. The current design achieves a range of apartment types, sizes, and designs whilst also providing adequate open space and achieving a strong urban edge and passive surveillance.

3.0 PLANNING AND DEVELOPMENT CONTEXT

3.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants. More specifically, this chapter of the EIAR was prepared jointly by Mrs. Muireann Coughlan, Associate Planner and Ms. Danielle O' Leary, Senior Planner with Hughes Planning and Development Consultants.

Mrs. Muireann Coughlan graduated with honours from University College Cork with a Masters in Planning and Sustainable Development (MPLAN) in 2010, having previously completed a joint honours Bachelor of Arts degree in Geography and Sociology. Muireann has also completed a Post Graduate Certificate in Design Management. Muireann is currently an Associate with Hughes Planning and Development Consultants. Prior to this, she worked in local government and private consultancies in both Ireland and the United Kingdom. Muireann has 13 years of experience in the field of planning, which has included providing consultancy services in respect of several major residentially-led projects. Muireann is a Full Member of the Royal Town Planning Institute (RTPI) and Corporate Member of the Irish Planning Institute (IPI).

Ms. Danielle O'Leary of Hughes Planning and Development Consultants, graduated with honours from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2018, having previously completed a Bachelor of Science Degree in Earth and Environmental Systems Sciences from University College Cork (UCC) in 2016. Danielle has over 5 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major residentially-led projects, including EIA. Danielle is currently a Senior Planner in the practice of Hughes Planning and Development Consultants and is a member of the Irish Planning Institute (IPI).

It outlines the statutory planning context and the previous planning history for the subject site.

3.2 Statutory Planning Context

This section of the report will examine the planning framework, including national, regional and local, that informs the use and development of the subject lands. Documents of note are as follows:

- *Project Ireland 2040 – National Planning Framework (2018);*
- *National Development Plan 2021-2030;*
- *Housing For All – A New Housing Plan for Ireland (2021);*
- *Urban Development and Building Heights – Guidelines for Planning Authorities, December 2018;*
- *Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007);*
- *Sustainable Residential Development in Urban Areas – Guidelines for Planning Guidelines (2009);*
- *Urban Design Manual – A Best Practice Guide, 2009;*
- *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2022);*
- *Design Manual for Urban Roads and Streets (2013);*
- *The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009);*
- *Smarter Travel: A Sustainable Transport Future - A New Transport Policy for Ireland (2009).*
- *Guidelines for Planning Authorities on Childcare Facilities (2001);*
- *Regional Spatial & Economic Strategy for the Eastern and Midland Regional Assembly 2019-2031; and*
- *Fingal Development Plan 2023-2029.*

Each of the above referenced policy documents will be discussed in turn overleaf:

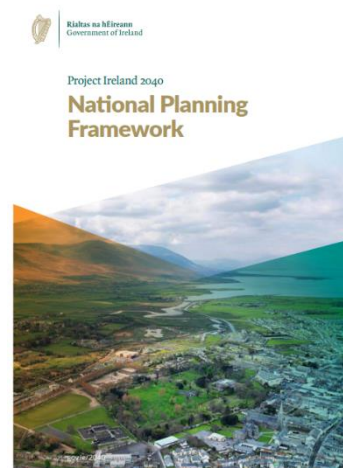
3.3 National and Regional Planning Policy Context

3.3.1 Project Ireland 2040 – National Planning Framework (2018)

The Project Ireland 2040 - National Planning Framework (NPF), 2018, seeks more balanced and concentrated growth, particularly within the five major cities in Ireland. The following target is outlined in relation to national growth:

'We have five cities in Ireland today in terms of population size (>50,000 people): Dublin, Cork, Limerick, Galway and Waterford. In our plan we are targeting these five cities for 50% of overall national growth between them, with Ireland's large and smaller towns, villages and rural areas accommodating the other 50% of growth.'

The NPF a summary of the key national targets for structuring the overall national growth anticipated, promoting regional parity, creating accessible centres of scale and securing compact and sustainable growth. The clear policy direction at a national scale is to grow our regions and accommodate new housing within or adjacent to existing built-up areas. It must be acknowledged that in order to accommodate the population growth envisaged by the National Planning Framework, that there is a requirement for an increased output of a mix of residential units over the coming years, up to 2040 to meet a growing demand.



With regards to managing growth, Section 1.2 of the National Planning Framework sets out that more balanced growth also means more concentrated growth and that the key five cities of **Dublin**, Cork, Limerick, Galway and Waterford are targeted for **50% of overall national growth** between them, with **Ireland's large and smaller towns, villages and rural areas accommodating the other 50% of growth**. In addition, National Strategic Outcome No. 1 '*Compact Growth*', provides that the NPF is focused on the careful management of the sustainable growth of compact cities, **towns** and villages in order to add value and create more attractive places in which people can live and work. To achieve this outcome, there must be an increase in the proportion of more compact forms of growth in the development of settlements of all sizes, from the largest city to the smallest village.

The National Planning Framework more specifically outlines that, strategies are included in Chapter 2.2 of the Planning Framework which seek to target a greater proportion (40%) of future housing development to be within and close to the existing 'footprint' of built-up areas. This target is to be achieved by making better use of under-utilised land and buildings, including 'infill', 'brownfield' and publicly owned sites and vacant and under-occupied buildings, with higher housing and jobs densities, better serviced by existing facilities and public transport.

*"a major new policy emphasis on renewing and developing existing settlements will be required, rather than continual expansion and sprawl of cities and towns out into the countryside, at the expense of town centres and smaller villages **The target is for at least 40% of all new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and/or brownfield sites.** The rest of our homes will continue to be delivered at the edge of settlements and in rural areas'.*

A number of objectives outlined in Appendix 1 of the National Planning Framework have been identified to ensure proper planning and sustainable development. We consider that the following national policy objectives to be of relevance. These objectives reflect the type of growth that is sought in line with the goals of the NPF:

National Policy Objective 3a *Deliver at least 40% of all new homes nationally, within the built-up footprint of existing settlements.*

National Policy Objective 3b *Deliver at least half (50%) of all new homes nationally, within the built-up footprint of existing settlements.*

- National Policy Objective 4** *Ensure the creation of attractive, liveable, well designed, high-quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being.*
- National Policy Objective 5** *Develop cities and **towns of sufficient scale** and quality to compete internationally and to be drivers of national and regional growth, investment and prosperity.*
- National Policy Objective 6** ***Regenerate and rejuvenate cities, towns and villages of all types and scales as environmental assets, that can accommodate changing roles and functions, increased residential population** and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area.*
- National Policy Objective 11** *In meeting urban development requirements there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth.*
- National Policy Objective 33** *Prioritise the provision of new homes at locations **that can support sustainable development and at an appropriate scale** of provision relative to location*
- National Policy Objective 35** *Increase residential density in settlements, through a range of measures including reductions in vacancy, re-use of existing buildings, infill development schemes, area or site-based regeneration and increased building heights*

The proposed development is appropriately sited within the existing settlement of Balbriggan and does not constitute urban sprawl. The subject lands have been earmarked for residential development for some time and the principle of same on site has been established through the sites planning history. Whilst the previous permission on site under **Reg, Ref. F08A/1329** is noted and acknowledged, this new application essentially seeks to improve the quality of the scheme and bring the density and design further in line with more recent planning policy.

The proposed location of the site will ensure that growth is contained within the metropolitan boundary, and will offer *'improved housing choice, transport mobility and quality of life.'* The proposed development is consistent with the above as it involves the development of underutilised land which is in close proximity Balbriggan town centre and a number of public transport services. The proposal will also bring about the provision of essential infrastructure, including a significant portion of the Flemington Land link road (c-ring) which will aid in unlocking the potential of existing residentially zoned lands located to the north-east and south of the application site. The proposed development complies with the relevant National Policy Objectives identified in the National Framework comprised within Appendix 1 on pages 159 to 169.

3.3.2 National Development Plan 2021-2030

The National Development Plan 2021-2030 sets out the investment priorities that will underpin the successful implementation of the National Planning Framework, including the development of the necessary housing stock set out therein. The National Development Plan demonstrates the Government's commitment to meeting Ireland's infrastructure and investment needs over the next 7-8 years, through a total investment estimated at €165 billion over the plan period. This includes investment in high quality integrated public and sustainable transport systems as well as health and education.

Active Travel is identified as one of the Strategic Investment Priorities of the plan and Balbriggan is set to benefit from the forthcoming upgrades associated with the DART + programme. This programme is noted as the cornerstone of rail investment over the lifetime of Project Ireland 2030 and represents the single biggest investment in the Irish rail network. As part of this programme, infrastructural projects including DART+ Coastal North to Drogheda via Balbriggan and the significant expansion of fleet will have a positive impact on the town of Balbriggan and accessibility to and from same.

The subject development on lands at North-West Balbriggan, c.2.5km from Balbriggan Train Station, is considered to aid in meeting the targets and objectives of the National Development Plan through the more efficient use of an underutilised site within an existing built-up area, whilst providing the critical mass required to sustain and support public transport services. The proposed development is considered to reflect the type of sustainable development which is sought throughout National Policy with regards to the appropriate development of under-utilised sites.

3.3.3 Housing For All – A New Housing Plan for Ireland (2021)

The 'Housing for All - A new Housing Plan for Ireland' was published in September 2021 as part of the Irish Government's 'Our Shared Future' programme which, in turn, sets out the Government's mission to tackle the housing crisis. The objective of the plan is to ensure that everybody has 'access to sustainable, good quality housing to purchase or rent at an affordable price, built to a high standard, and located close to essential services, offering high quality of life.' The plan seeks to increase new housing supply to an average of at least **33,000 new units per year** with specific pathways outlined to achieve the four overarching objectives of the plan which are:

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

Each of the pathways comprises a comprehensive suite of actions to achieve the above referenced Housing Policy Objectives. These pathways are illustrated in the following extract.

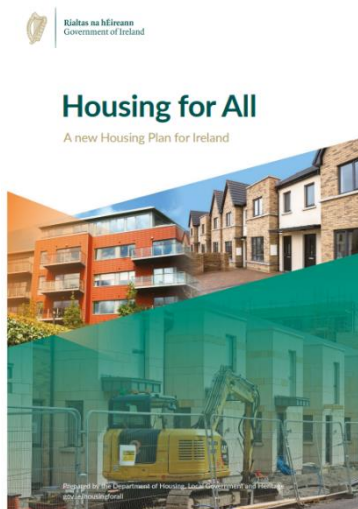




Figure 3.1 Figure indicating the four pathways to Housing for All.

Pathway No. 3 '*Increasing New Housing Supply*' stipulates a number of key aspects to providing for new homes. It is also noted within that by 2040, an additional one million people will be residing in Ireland. The state is acting decisively to activate supply across both public and private lands, which is critical to ensuring that new homes to be built over the next decade are located where housing demand is greatest and where there is good accessibility to employment, education, public transport, and other services and amenities. In this context Section 3.1 of the Plan '*Increase Land Availability for Residential Development*' states that '*a steady supply of suitable and serviced zoned land is needed*' further providing that '*Local Authorities and elected members play a key role in zoning enough land to meet residential housing requirements, while also respecting the requirements for balanced regional development and the need to prevent urban sprawl.*' We also make reference to the following objectives as included within the Housing For All document which are of note:

Housing Policy Objective 11.2 *Develop section 28 Guidelines for Planning Authorities on Sustainable and Compact Settlement Guidance (SCSG), including guidance on housing typologies to facilitate innovative approaches to medium and higher densities.*

In accordance with the above objective, we note the Department of Housing, Local Government and Heritage's publication of the consultation paper for the *Sustainable and Compact Settlements Guidelines for Planning Authorities – Proposed Policy Approach* and the proposed scheme has been developed in cognisance of these new standards.

Housing Policy Objective 12.2 *Develop proposals for new Urban Development Zones, to deliver a coordinated and transparent approach to the delivery of residential and urban development, particularly on brownfield sites, meeting the compact growth objectives of the National Planning Framework.*

The provision of residential units in Balbriggan supports homeownership and affordability, will result in increased social housing provision and will provide for the efficient use of well-located lands, which have capacity to comfortably absorb additional development. The proposed development as such, responds to a recognised need, at national level, for residential accommodation and for the growth of our smaller towns and villages in a compact and sustainable manner. The proposal is consistent with policy in this regard.

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

These guidelines are intended to set out national planning policy guidelines on building heights in relation to urban areas, as defined by the census, building from the strategic policy framework set out in Project Ireland 2040 and the National Planning Framework.

These guidelines outline that there is significant scope to accommodate anticipated population growth and development needs, whether for housing, employment or other purposes, by building up and consolidating the development of our existing urban areas. The rationale for consolidation and densification to meet our accommodation needs applies in relation to locations that development plans and local area plans would regard as city and town centre areas as well as areas in and around existing urban areas and suburban areas.

This policy encourages the facilitation of increased levels of residential development in our urban centres and significant increases in the building heights and overall density of development through the planning process, particularly at local authority and An Bord Pleanála levels. Increasing prevailing building heights is deemed to have a critical role to play in addressing the delivery of more compact growth in our urban areas, particularly our cities and large towns through enhancing both the scale and density of development.

In particular, increased density and height of development within the footprint of developing sustainable mobility corridors and networks, where substantial investment in public transport infrastructure has been made as part of Project Ireland 2040. SPPR 1 goes on to outline the following in relation to this:

In accordance with Government policy to support increased building height in locations with good public transport accessibility, particularly town/city cores, planning authorities shall explicitly identify, through their statutory plans, areas where increased building height will be actively pursued for both redevelopment and infill development to secure the objectives of the National Planning Framework and Regional Spatial and Economic Strategies and shall not provide for blanket numerical limitations on building height.

It is a specific planning policy requirement that in planning the future development of greenfield or edge of city/town locations for housing purposes, planning authorities must secure: 1. The minimum densities for such locations set out in the Guidelines issued by the Minister under Section 28 of the Planning and Development Act 2000 (as amended), titled 'Sustainable Residential Development in Urban Areas (2007)' or any amending or replacement Guidelines; 2. A greater mix of building heights and typologies in planning for the future development of suburban locations; and 3. Avoid mono-type building typologies (e.g. two storey or own-door houses only), particularly, but not exclusively so in any one development of 100 units or more.

The building heights, unit mix and density proposed is considered to be consistent with the above policy content, and with the pattern of development surrounding the subject site. The proposal provides for building heights in the general range of 2-4 storeys, with 1 no. 5-storey building also proposed. This is not overly excessive and will provide for an appropriate form and scale of development in considering the site's location and context.

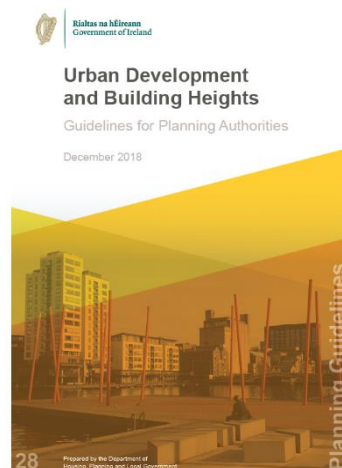




Figure 3.2 CGI view showing the taller blocks on site (i.e. 4-5 storeys in height) concentrated along the spine road.

In addition to the above, it is considered that the proposed development scores highly when assessed against the development management criteria set out in the guidelines as, aside from being a well-connected site, the proposal will:

- Enhances the character, built environment and public realm of the area, featuring well considered high quality materials and appropriately responds to the scale of residential development on the surrounding area;
- Maximises access to natural daylight, ventilation and views due to the positioning of the units and taller blocks (2-5storeys); and
- Has limited impact in relation to overshadowing and loss of light due to its separation from existing residential developments in the surrounding area.

Section 3.2 of the Building Height Guidelines also states that:

To support proposals at some or all of these scales, specific assessments may be required and these may include:

- *Specific impact assessment of the micro-climatic effects such as downdraft. Such assessments shall include measures to avoid/mitigate such micro-climatic effects and, where appropriate, shall include an assessment of the cumulative micro-climatic effects where taller buildings are clustered.*
- *In development locations in proximity to sensitive bird and/ or bat areas, proposed developments need to consider the potential interaction of the building location, building materials and artificial lighting to impact flight lines and/ or collision.*
- *An assessment that the proposal allows for the retention of important telecommunication channels, such as microwave links.*
- *An assessment that the proposal maintains safe air navigation.*
- *An urban design statement including, as appropriate, impact on the historic building environment.*
- *Relevant environmental assessment requirements including SEA, EIA, AA and Ecological Impact Assessment, as appropriate.*

The building heights featuring as part of the proposed development are limited to between 2 and 4 storeys generally, with 1 no. 5-storey building proposed. On this basis, no micro-climatic impacts or

impacts on air navigation are anticipated. The subject application is accompanied by the following reports and assessment in line with the above requirements:

- An Environmental Impact Assessment Report, inclusive of a Wind and Microclimate Chapter, a Biodiversity Chapter and an Archaeology Chapter;
- An Appropriate Assessment Screening Report, prepared by Altemar Environmental Consultants; and
- A Sunlight, Daylight and Shadow Assessment Report, as prepared by 3D Design Bureau.

Overall it is considered that the proposed development accords with the key guidance included within the Urban Height Guidelines, providing for greater densification on zoned and serviced lands, providing for moderate building heights, appropriate for the sites suburban location and providing for a wide mix of unit types and sizes, suitable for a range of tenures.

3.3.5 Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007)

The purpose of these Guidelines is to assist in achieving the objectives for Delivering Homes, Sustaining Communities contained in the Government Statement on Housing Policy which focuses on creating sustainable communities that are socially inclusive by promoting high standards in the design and construction and in the provision of residential amenity and services in new housing schemes. The guidelines set out the minimum standards for new housing, which the proposed development will comprehensively comply with.

The subject site is located approximately 3km from Balbriggan town centre which features various local amenities including shops, restaurants, entertainment venues etc. The subject site is also located c. 1.6 km from Castle Mill Shopping Centre. Furthermore, Balbriggan train station is c. 2.5 km from the site, providing direct access to Dublin City Centre and beyond. The proposed development is therefore consistent with the above guidance.



The proposed dwellings have also been designed in accordance with the standards set out in the Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007). An assessment against these standards is provided overleaf:

Space Provision and Room Sizes for Typical Dwellings					
Dwelling Type Standard	Minimum Gross Floor Area	Main Living Room	Aggregate Living Area	Aggregate Bedroom Area	Storage Area
4 Bed/2 Storey/6 Person (Unit Type H) (14 no. units)	110sq.m	15sq.m	40sq.m	43sq.m	6sq.m
Proposed	118.7sq.m	26.3sq.m	41.3sq.m	40.1sq.m	9sq.m
3 Bed / 3 Storey / 6 Person (Unit Types A1, B1 (50 no. units)	110sq.m	15sq.m	37sq.m	36sq.m	6 sq.m

Proposed	127.2sq.m – 129.2sq.m	16.7sq.m- 19sq.m	37sq.m	40.3sq.m- 40.7sq.m	6.9sq.m- 15sq.m
3 Bed/ 2 Storey/ 5 Person (Unit Types A, B, C, C1, F, J, K (187 no. units))	92sq.m	13sq.m	34sq.m	32sq.m	5sq.m
Proposed	104sq.m – 113.8sq.m	16.7sq.m- 27.9sq.m	35.3sq.m – 42.6sq.m	31.6sq.m – 34.9sq.m	5.2sq.m- 9.2sq.m
2 Bed/ 2 Storey/ 4 Person (Unit Type D) (127 no. units)	80sq.m	13 sq.m	30 sq.m	25 sq.m	4 sq.m
Proposed	84sq.m	17sq.m	32.8sq.m	24.6sq.m	4.8sq.m

Table 3.1 Assessment of proposed development against the minimum standards for room sizes, dimensions and overall floor areas included in Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007)

As demonstrated in the above table, the vast majority of the units proposed on-site meet if not exceed the size standards set out within the 2007 guidelines. Some of the proposed 3-bed, 2-storey units and 2-bed 2 storey units, fall marginally short of the requirements for aggregate bedroom areas, by a maximum of 0.4sq.m. This is a minor deviation and only accounts for a small number of units overall.

We submit that all dwellings exceed the minimum standards set out for room sizes and widths for houses as demonstrated below in Tables 3.2 and 3.3 below:

Minimum Bedroom Size (Minimum bedroom floor areas exclude built in storage space)		
	Single bedroom	Double bedroom
Standard	7.1sq.m.	11.4sq.m.
2 Bedroom (Unit Type D)	N/A	11.4sq.m – 13.2sq.m (both double rooms)
3 Bedroom (Unit Types A, A, B, A1, B1, C, C1, F, J, K)	7.1sq.m – 7.8sq.m	11.5sq.m-13.9sq.m
4 Bedroom (Unit Type H)	7.3sq.m – 8.0sq.m	12.6sq.m – 13sq.m

Table 3.2 Assessment of proposed development against the minimum standards for room sizes included in Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007)

Minimum Room Widths					
	Living Room - One bedroom	Living Room - Two bedroom	Living Room - Three Bedroom	Double bedroom	Single bedroom
Standard	3.3m.	3.6m.	3.8m.	2.8m.	2.1m.
2 Bedroom (Unit Type D)	N/A	4.705m	N/A	2.9m-3.1m	N/A

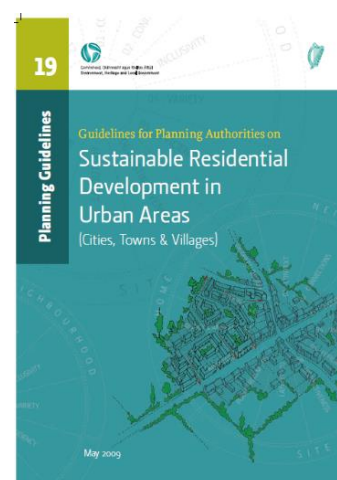
3 Bedroom (Unit Types A, B, A1, B1, C, C1, F, J, K)	N/A	N/A	3.8m - 5.6m	2.8m minimum	2.2m minimum
4 Bedroom (Unit Type H)	N/A	N/A	4.563m	3.8m	2.4m

Table 3.3 Assessment of proposed development against the minimum standards for widths included in Quality Housing for Sustainable Communities – Guidelines for Planning Authorities (2007)

3.3.6 Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities (2009)

The aim of the above guidelines is to identify the primary principles and criteria which are most important to the design of housing and to highlight specific design features, requirements and standards. The document makes reference to both infill and backland development and states that *'infill developments and urban redevelopment projects should respect the character of the existing neighbourhood.'* In relation to the main considerations regarding infill and backland development, the guidelines state the following:

'It is important to recognise the existing character, street patterns, streetscapes and building lines of an area, particularly in the case of infill sites or where new dwellings will adjoin existing buildings' and that 'the degree to which they will impact on any new development will need to be taken into account in assessing the development potential of any proposed site.'



Section 5.9 of the Guidelines on Sustainable Residential Development in Urban Areas, 2009 discusses infill residential development and provides that:

"Potential sites may range from small gap infill, unused or derelict land and backland areas, up to larger residual sites or sites assembled from a multiplicity of ownerships. In residential areas, whose character is established by their density or architectural form, a balance has to be struck between the reasonable protection of the amenities and privacy of adjoining dwellings, the protection of established character and the need to provide residential infill."

In consideration of the contents of the 2009 guidelines, it is submitted that the proposal makes efficient use of underutilised land which promotes the consolidation of the area, while protecting the residential amenity of neighbouring properties. In principle, the proposed development is considered to be acceptable in planning terms. The proposed development on lands at north-west Balbriggan is therefore considered to be in compliance with the Sustainable Residential Development in Urban Areas Guidelines (2009) as it proposes the construction of 564 no. high quality dwellings which do not have an adverse impact on the residential amenity of surrounding dwellings.

Density is also a key consideration of the above guidelines with Section 5.4 stating the following in this regard:

'Where there is good planning, good management, and the necessary social infrastructure, higher density housing has proven capable of supporting sustainable and inclusive communities. In general, increased densities should be encouraged on residentially zoned lands.'

More specifically, we refer to Sections 5.5-5.12 which outline the typical density standards in which a particular site can achieve. Balbriggan is considered a large town as per the abovementioned guidelines

and therefore the application site should look to achieve a density of 30-50 units per hectare. The following commentary is noted with regards to density in Section 5.11:

‘Development at net densities less than 30 dwellings per hectare should generally be discouraged on the interests of land efficiency, particularly on sites in excess of 0.5 hectares.’

In accordance with the above requirements, the proposed development provides for a net residential density of **c. 35.13** units per hectare.

The proposed development has been designed to fully address the provisions of these guidelines, as set out hereunder:

- The design of the proposed development responds appropriately to its locational context in terms of its scale, massing and architectural treatment. It will provide an appropriate form of residential development that respects the existing form of residential growth to the west of Balbriggan.
- The location of the proposed development close to public transport routes will ensure good connectivity. The subject site is within proximity to the bus routes as well as Balbriggan Train Station linking Balbriggan to Dublin to the south and Belfast to the north.
- By its nature, the proposed development provides a range in housing types to accommodate for a mix of the population demographic. With the growth of Balbriggan as a whole, providing a range of dwelling types is considered an appropriate outcome for sustainably accommodating growth for the future. In terms of layout, the provision of 3 no. creche units, a number of commercial and communal units, and a variety of open space areas will facilitate significant levels of interaction within the development.
- The proposed development, by reason of its location on a greenfield site, together with its density and layout, will promote the efficient use of land and of energy, including in relation to transport, and thereby minimise greenhouse gas emissions.
- The proposed development incorporates large open space areas to the west of the site as well as a number of individually distinct open space areas throughout the development. This will provide the development a distinct sense of place.
- The proposed design provides for a high-quality development of purpose-built residential dwellings and apartments/duplex units. The private open space areas, as well as the public open spaces areas, will afford a high standard of residential environment to future residents as well as residents of the surrounding area who will frequent the public open space areas provided within the development.

Having regard to the foregoing, it is considered that the proposed development would be consistent with the Sustainable Residential Development in Urban Areas Planning Guidelines (2009).

3.3.7 Sustainable and Compact Settlements – Guidelines for Planning Authorities, Proposed Policy Approach (Consultation Paper – March 2023)

In March 2023, a Consultation Paper was issued in respect of the Proposed Policy Approach for the forthcoming ‘Sustainable and Compact Settlements – Guidelines for Planning Authorities’ was published by the Department of Housing, Local Government and Heritage. It is the Housing Ministers intent that these new Guidelines, will replace the Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities (the ‘Sustainable Residential Development Guidelines’) published in 2009. The Sustainable and Compact Settlements Guidelines, once finalised, will constitute Ministerial Guidelines under Section 28 of the Planning and Development Act 2000, as amended.

Whilst the preparation of the draft guidelines is ongoing, the consultation paper outlines the evolution of wider policy since the publication of the Section 28 Guidelines, including the publication of the National Planning Framework (2018), Housing for All (2021), and the Housing for All Action Plan Update (2022) and provides a summary of the emerging policy approach in relation to density and development standards for housing.

In relation to density, the proposed policy approach of the Sustainable and Compact Settlements Guidelines is to indicate recommended density ranges for Cities, Metropolitan Towns, Large Towns (10,000 + population), Small and Medium Sized Towns (>1,500 to 10,000 population) and Rural Towns and Villages (>1,500 population). With a population in excess of 10,000 people, Balbriggan may be classified as a ‘Large Town’ and as such the consultation paper states that *densities of 40-150 dph in town centres and urban areas and densities of 30 – 80 dph in suburban and edge areas*. The subject site featuring as part of this application, is located on the western periphery of Balbriggan and as such a net residential density of 35.13 dph is proposed which fully accords with this proposed policy approach.

With regards to Housing Standards, the proposed policy approach of the new Sustainable and Compact Settlements Guidelines includes the following recommended standards:

- *Separation: A minimum separation distance of 16 metres between opposing upper floor windows that serve habitable rooms⁶ at the rear of houses and duplex units. Provision for further reductions where there are no opposing windows serving habitable rooms, and where suitable privacy measures are designed into the scheme to prevent overlooking of habitable rooms and private amenity spaces;*

This recommendation is a welcomed revision from the current typical 22 metre separation distance requirement which is outlined across various development plans. As part of the current proposal, whilst aiming to adopt this 22metre separation distance requirement, there are instances where this separation distance can no be achieved, however in cognisance of these forthcoming guidelines separation distances of 16 metres or more have been implemented across the scheme.

- *Private Open Space: A minimum private open space provision of 10 sq. metres per bedspace, with provision for further reduction where an equivalent amount of semi-private open space is provided in lieu of private open space, subject to an absolute minimum provision of 5 sq. metres private open space per bedspace. The recommended standard also includes greater flexibility in relation to the design and location of private open space, to allow for terraces, patios and balconies at ground or upper levels.*

The recommendations set out above in relation to private open spaces is noted, the current scheme provides a sufficient provision of private amenity space for all house, apartment and duplex units which is in compliance with the standards set out within the current Fingal Development Plan 2023-2029.

- *Public Open Space: A minimum public open space requirement of 10% of the total site area (net) for new residential development in statutory development plans.*



The proposed development featuring as part of this application, provides for a total of 5.13 hectares of Public Open Space (2.86 ha of Class 1 Open Space and 2.268ha of Class 2 Public Open Space) which represents 22.68% of the total red line boundary area. This is well in excess of the minimum standards recommended above, and in line with the current requirements of the Fingal Development Plan 2023-2029.

- *Car Parking: In order to meet the targets set out in the National Sustainable Mobility Policy 2022 and in CAP23 for reduced private car travel it will be necessary to apply a graduated approach to the management of car parking within new residential development. In 'Cities', 'Metropolitan Towns' and 'Large Towns (10,000+ population)' car parking should be graduated based on location and access to services by public transport, walking and cycling. In areas of high accessibility, car-parking provision should be minimised, substantially reduced or wholly eliminated, while in areas of medium accessibility, car-parking provision should be substantially reduced.*

The proposed development provides for a total of 927 no. car parking spaces to serve the proposed development. This provision falls slightly below the Fingal Development Plan requirements, but is in line with the broader national policy direction to reduce car dependency, particularly given the accessible nature of the subject lands.

The intent of the above recommendations is to provide greater flexibility to allow for more compact and sustainable forms of development and greater housing choice.

With respect to Quality Design and Placemaking, the consultation paper stipulates that the proposed policy approach will include guidance in relation to quality design and placemaking, including indicators of quality design and placemaking that should be applied in the preparation and consideration of individual planning applications. This will include indicators relating to sustainable and efficient movement, the mix and distribution of land uses, the integration of natural assets and green infrastructure and built form. The proposed policy approach highlights that the quality of design and placemaking will be particularly important in the case of compact housing. We note that the proposed scheme has been developed in line with best practice placemaking at the forefront, providing for a permeable and accessible scheme, with an appropriate mix of residential and commercial land uses, and an appropriate provision of high-quality accessible, useable open space areas.

It is anticipated that the formal Draft Sustainable and Compact Settlement Guidelines will be published in the latter stages of 2023.

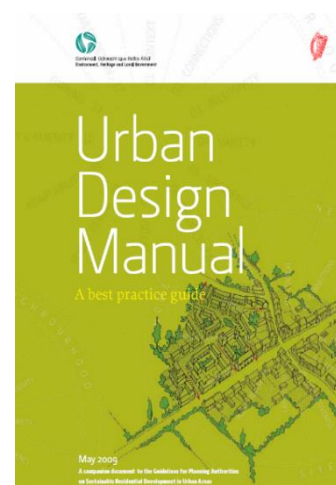
3.3.8 Urban Design Manual – A Best Practice Guide, 2009

The 'Urban Design Manual – A Best Practice Guide, 2009' is based around twelve questions that have been drawn up to encapsulate a full range of design considerations for residential development such as that proposed on the subject site. These questions are 'a distillation of current policy and guidance and tried and tested principles of good urban design.'

This report reviews the proposed development in this context in an effort to address the key issues of design, scale, massing and integration with the fabric of the area while respecting the amenity of adjacent properties.

(i) *Context - How does the development respond to its surroundings?*

The proposed development will have a prominent position on the proposed 'C Link Road' (Flemington Link Road). The 564 no. proposed units sit comfortably with the topography of the site and surroundings providing an appropriate scale and density, whilst respecting adjacent dwellings to the east and south along with the amenity enjoyed by the residents therein. The form, architecture and landscaping of the proposed development have been informed, but not determined, by the surrounding area. Existing



views from various parts of the site and existing landscape/historical features have been considered when creating the various neighbourhoods within the developments. Please refer to the Landscape Strategy & Design Report, prepared by IS Design, for further details on the evolution of the proposal.

As noted in Section 5.0 above, the development would be finished in materials of the highest quality to ensure it creates a distinct scheme with its own character while integrating well with adjacent houses. Each dwelling will feature a mix of brick work and render finish to external walls and selected blue/black slate or tile finish to roof as indicated on the architectural drawings submitted with this application. Please refer to the Character Area and House Type report for further details.

(ii) Connections - How well connected is the new neighbourhood?

The proposed development scheme has been designed to facilitate quality all-round access such as pedestrian, cyclist and vehicular access that links the site with Balbriggan town centre via the proposed C-ring Link Road. The proposed development features extensive pedestrian and cycle paths throughout the development and ties in with the surrounding areas existing cycle and pedestrian networks.

The site is in close proximity to the M1 motorway which links the site to the Dublin-Belfast corridor. More locally, the proposed 'C-ring road' which is proposed to run through the site will improve vehicular connectivity for the subject site and the surrounding area more broadly.

(iii) Inclusivity - How easily can people use and access the development?

The proposed development includes a variety of apartment and dwelling types in various sizes and configurations. All units in the development are accessible for disabled access. The proposed development presents a positive aspect to passers-by and pedestrians traversing the 'C-Ring' Road which is proposed to run through the site. The proposed boundary treatments will create a passive and friendly setting. The internal footpaths and cycle paths will make the development permeable to all.

(iv) Variety: - How does the development promote a good mix of activities?

The range of uses available within the development is limited by the residential zoning of the site. However, the proposed development features 3 no. creches which serve the subject development as well as the surrounding area more broadly with 9 no. commercial/retail unit and 7 no. communal/community units also proposed.

(v) Efficiency - How does the development make appropriate use of resources, including land?

The concept of efficiency and sustainable development are key components of the design approach adopted. The proposal provides for moderate density residential development (35.13 units per hectare (net)), taking into account accessibility to Balbriggan town centre and the need to protect adjoining residential amenity as well as adjacent areas of sensitivity. The development has been laid out to exploit the best solar orientation thus minimising energy use.

(v) Distinctiveness - How do the proposals create a sense of place?

As discussed in Section 5.0, the proposed development will feature 5 no. character areas, as illustrated above. The neighbourhood areas create a sense of place for future residents within the development through a combination of viewpoints, parks/open space areas, architectural features/materials and the hierarchy of streets. Please refer to the Landscape Strategy & Design Report, prepared by IS Design for further information.

(vii) Layout - How does the proposal create people friendly streets and spaces?

The development scheme features a number of dwellings which are oriented to face the proposed C Link Road which runs vertically through the site. These aspects of the development will improve existing streetscape conditions along this interface and will aim to slow down the traffic going through the site. A hierarchy of streets, variety of surface treatments and landscaped areas/parks have been used to create people friendly streets and spaces within the development. Efforts have been made to ensure

that the roads are not dominated by vehicle users but rather safely shared by cyclists, pedestrians and drivers.

(viii) Public Realm - How safe, secure and enjoyable are the public areas?

The scheme has been designed with ample areas of public open space, play areas and landscaped areas being provided throughout the development. These public open space areas are located in close proximity to the proposed units and have windows fronting onto them providing passive surveillance and ensuring the safety/security/enjoyment of users of these spaces. The proposed units are linked with the class 1 park to the west of the site, as well as the fronting the proposed C-Ring link road, with its cycle and pedestrian networks will also allow for active and passive use by local residents in the surrounding area.

(ix) Adaptability - How will the buildings cope with change?

All proposed dwellings are energy-efficient and equipped for challenges anticipated from a changing climate. The proposed houses can be extended without ruining adjoining amenity, the character and style of the houses, their layout and outdoor amenity space due to the building footprints adopted and the size of the private open space areas provided as well as the potential for an additional bedroom and en-suite to be provided at attic level in a number of house types.

(x) Privacy and Amenity - How does the scheme provide a decent standard of amenity?

All houses in the proposed development will have direct access to an area of useable private garden accessible from ground floor level which greatly exceeds development plan standards. All apartments and duplex units are provided with individual balconies and terraces which exceed development plan standards.

All dwellings, apartments and duplex units have access to areas of public open space provided through the site which. All dwellings, apartments and duplex units are designed to prevent sound transmission by appropriate acoustic insulation.

(xi) Parking - How will the parking be secure and attractive?

The proposed development includes a total of 927 no. car parking spaces including set down spaces, which are provided throughout the proposed development comprising 806 no. spaces for the residential units, 94 no. visitor spaces, 11 mobility access spaces, 7 spaces allocated for the creche and 9 set down spaces. A total of 2,014 bike spaces are also proposed.

(xii) Detailed Design - How well thought through is the building and landscape design?

The materials and external design of the proposed development make a positive contribution to the locality. Design of the buildings will facilitate easy and regular maintenance. Care has been taken over the siting of flues, vents, bin storage, etc.

Extensive work and consideration have gone into the landscape design for the proposed development. Please refer to the Landscape Strategy & Design Report, prepared by IS Design for further information.

3.3.9 Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2022)

The proposed 102 no. apartment units and 84 no. duplex units featuring in the development have been designed to be fully comply with the standards set out in *Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities*, published by the Department of the Environment, Community and Local Government in December 2022. These guidelines replace the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2020). The 2020 Guidelines update the previous guidance in the context of greater evidence and knowledge of current and likely future housing demand in Ireland, taking account the percentage of co-living accommodation that has been built in recent years.

An assessment against each of the applicable standards is provided below and overleaf:

Housing Mix

The following guidance is provided in relation to housing mix:

Specific Planning Policy Requirement 1

Apartment developments may include up to 50% one-bedroom or studio type units (with no more than 20-25% of the total proposed development as studios) and there shall be no minimum requirement for apartments with three or more bedrooms. Statutory development plans may specify a mix for apartment and other housing developments, but only further to an evidence-based Housing Need and Demand Assessment (HNDA), that has been agreed on an area, county, city or metropolitan area basis and incorporated into the relevant development plan(s).

The proposed 10 no. apartment blocks within the proposed scheme comprise a total of 102 no. units, 35 no. of which are one-bedroom units and 67 no. of which are two-bedroom units. The proposed duplex blocks comprise a total of 84 no. units, 22 of which are one-bedroom units, 36 no. of which are two-bedroom units and 26 no. of which are three-bedroom units. Cumulatively, the apartment on duplex blocks proposed comprise a total of **57 no. one-bedroom units (30.6%)**, **103 no. two-bedroom units (55.4%)** and **26 no. three-bedroom units (14%)**.

The one bedroom units proposed equate to less than 50% and therefore the proposed unit mix complies with this aspect of the 2022 standards.

Minimum overall apartment floor areas

The overall apartment floor area sizes required for apartment units outlined in the 2022 Guidelines are as follows:

- *Studio apartment (1 person)* 37sq.m
- *1-bedroom apartment (2 persons)* 45sq.m
- *2-bedroom apartment (3 persons)* 63sq.m
- *2-bedroom apartment (4 persons)* 73sq.m
- *3-bedroom apartment (5 persons)* 90sq.m

All apartments in the proposed development comply with and exceed the required minimum standards, as shown in Table 6.0 overleaf.



Minimum overall required floor areas		
Unit Type	Requirement	Floor Area of Proposed Units
One Bedroom	45sq.m.	Apartment Units 50.6sq.m – 50.8sq.m Duplex Units 50.5sq.m -70.2sq.m
Two Bedroom (4P)	73sq.m.	Apartment Units 81.9sq.m – 84.7sq.m Duplex Units - 92sq.m
Three Bedroom	90sq.m	Duplex Units – 97.5sq.m – 105.85sq.m

Table 3.4 Table showing the required overall floor areas provided for each apartment type

Section 3.8 of the 2022 apartment guidelines states that the majority of all apartments in any proposed scheme of 10 or more apartments shall exceed the minimum floor area standards by a minimum of 10%. From the above below, we note that the proposed overall floor areas are wholly compliant with the minimum overall required floor areas, pursuant to Section 3.0 of the guidelines and the requirements as set out in Section 3.8 as previously outlined.

Unit Mix:	Number of Apartments	Cumulative Min Floor Area
30.6% no. 1-bed units	57 no.	57 x 45sq.m = 2,565sq.m
55.4% 2-bed units	103 no.	103 x 73sq.m = 7,519sq.m
14% 3-bed units	26	26 x 90sq.m = 2,340sq.m
Total 100%	Total 186 apartments/duplex units	Total 12,424sq.m
1-beds + 10% min area	20	20 x 4.5sqm = +90sq.m
2-beds+10% min area	54	54 x 7.3sq.m = +394.2sq.m
3-bed +10% min area	20	20 x 9 sq.m = +180sq.m
Total +10% of majority	Total 94 apartments	12,424qm + 664.2sq.m = 13,088.20sq.m
Total Required Minimum Floor Area		12,424sq.m + 664.2sq.m = 13,088.20sq.m
Unit Types	Proposed Apartment Sizes	Cumulative Floor Area of Apartment and Duplex Units
1-Bed Unit Types	Between 50.5sq.m – 70.2sq.m	14,464.4sq.m
2-Bed Unit Types	Between 81.9sq.m – 92sq.m	
3-Bed Unit Types	Between 97.5sq.m and 105.85 sq.m	
Total Floor Area of Proposed Unit Types		14,464.4sq.m (which exceeds the minimum floor area outlined above of 13,088.20sq.m)

Table 3.5 Table outlining compliance with Section 3.8(a) of the Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities, 2022.

Evidently, the proposed apartment and duplex units comply with Section 3.8(a) of the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities 2022.

Minimum Aggregate Floor Areas and Minimum Widths for Living/Dining/Kitchen

The 2022 Guidelines require the following minimum aggregate floor areas in relation to Living/Dining/Kitchen Areas:

Unit Type	Minimum Width Required	Minimum Floor Area Required	Minimum Width Proposed	Minimum Aggregate Floor Area Proposed
One Bedroom	3.3m	23sq.m	3.32m	23sq.m
Two Bedroom (4P)	3.6m	30sq.m	4.150m	30sq.m
Three Bedroom	3.8m	34sq.m	4.17m	34sq.m

Table 3.6 Table showing the minimum aggregate floor areas and minimum widths for living/dining/kitchen areas

The proposed development is compliant with the minimum aggregate floor areas and minimum widths for living/dining/kitchen areas, as illustrated in the Housing Quality Assessment (HQA) document, prepared by Ferreira Architects, which accompanies this application.

Minimum Floor Areas, Minimum Widths and Minimum Aggregate Floor Areas for Bedrooms

The 2022 Guidelines require the following minimum aggregate floor areas and minimum widths in relation to bedrooms:

Unit Type	Minimum Width Required	Minimum Width Proposed	Minimum Floor Area Required	Minimum Floor Area Proposed
Single Bedroom	2.1m	2.2m	7.1sq.m	7.1sq.m
Double Bedroom	2.8m	2.8m	11.4sq.m	11.4sq.m

Table 3.7 Table showing the minimum aggregate floor areas and minimum widths for bedrooms

The overall aggregate bedroom floor areas for apartment unit areas is required as follows:

- *One bedroom – 11.4sq.m*
- *Two bedrooms (3 person) - 13 + 7.1 sq m = 20.1 sq m*
- *Two bedrooms (4 person) - 11.4 + 13 sq m = 24.4 sq m*
- *Three bedrooms - 11.4 + 13 + 7.1 sq m = 31.5 sq m*

In accordance with the above requirements, the minimum aggregate bedroom area for the proposed one-bedroom apartment/duplex units is 12.8sq.m, the minimum aggregate bedroom area for the proposed two-bedroom apartment/duplex units is 24.4sq.m and the minimum aggregate bedroom area for the proposed three-bedroom apartment/duplex units is 32.2sq.m.

The proposed development is fully compliant with the minimum aggregate floor areas, minimum widths and minimum aggregate floor areas for bedrooms, as illustrated in the Housing Quality Assessment table, prepared by Ferreira Architects, which accompanies this application.

Dual Aspect Ratios

The 2022 Guidelines require the following in relation to dual aspect apartments

In relation to the minimum number of dual aspect apartments that may be provided in any single apartment scheme, the following shall apply:

- (i) A minimum of 33% of dual aspect units will be required in more central and accessible urban locations, where it is necessary to achieve a quality design in response to the subject site characteristics and ensure good street frontage where appropriate.*
- (ii) In suburban or intermediate locations it is an objective that there shall generally be a minimum of 50% dual aspect apartments in a single scheme.***
- (iii) For building refurbishment schemes on sites of any size or urban infill schemes on sites of up to 0.25ha, planning authorities may exercise further discretion to consider dual aspect unit provision at a level lower than the 33% minimum outlined above on a case-by-case basis, but subject to the achievement of overall high design quality in other aspects.*

The proposed development provides 113 no. dual aspect apartments/duplex units, accounting for 60.6% of the. Apartment/duplex units proposed, which complies with the above requirements. In addition, the proposed single aspect apartment units have been orientated, so far as possible, to face in a southern, eastern or western direction and towards the open space areas to allow for maximum light exposure for each individual apartment throughout long periods of the daylight hours. This is consistent with the 2022 Guidelines which recommend, in Section 3.18, that single aspect apartments be orientated to face south, east or west, to allow for maximum sunlight exposure.

Floor to Ceiling Height

The 2020 Guidelines require a minimum floor to ceiling height of 2.4 metres, except in relation to ground floor apartments, where a minimum of 2.7 metres is required.

The proposal provides a floor to ceiling height in the apartment/duplex blocks in excess of 2.4 metres and 2.7 metres, with a 2.7 metres floor to ceiling height being adopted for ground floor level apartments.

Lift and Stair Cores

The 2020 Guidelines outline that subject to compliance with the dual aspect ratios specified in these guidelines and building regulations particularly in relation to fire safety, it is a specific planning policy requirement that up to 12 no. apartments per floor per individual stair/lift core may be provided in apartment schemes.

The proposed development complies with this aspect of the guidelines, with a maximum of 5 no. apartments proposed per floor.

Internal Storage

The minimum internal storage areas required for apartment units outlined in the 2020 Guidelines are as follows:

- *Studio 3 sq m*
- *One bedroom 3 sq m*
- *Two bedrooms (3 person) 5 sq m*
- *Two bedrooms (4 person) 6 sq m*
- *Three or more bedrooms 9 sq m*

Overall, the development provides for ample storage for each individual apartment that meets the required storage space needs for each unit. See Table 3.8 below.

Minimum storage space requirements		
Unit Type	Required storage space	Storage space provided
One Bedroom	3sq.m	3.1sq.m - 4.1sq.m
Two Bedroom	6sq.m	6.0sq.m -9.1sq.m
Three Bedroom	9 sq.m	9.1sq.m – 9.4sqm

Table 3.8 Table showing the provided storage space per apartment type

Minimum private open space requirements

The overall floor area of private open space provided in each apartment meets the required standards, also the minimum provisions for communal open space also meet the standard requirements, as shown in Table 3.9 below.

Minimum private open space requirements		
Unit Type	Required floor areas for private amenity space	Total provision of private open space
One Bedroom	5sq.m	5.3sq.m- 40sq.m
Two Bedroom	7sq.m	7.2sq.m – 60sq.m
Three Bedroom	9sq.m	19.4sq.m – 60sq.m

Table 3.9 Table showing the provided floor areas for private open spaces per apartment type

For further details, please refer to the Housing Quality Assessment document as prepared by Ferreira Architects, which accompanies this application.

Minimum communal amenity space requirements

The Guidelines provides minimum communal amenity space requirement in new apartments. They are as follows:

- *Two Bedroom (4P)* 7sq.m
- *Three Bedrooms* 9sq.m

Communal Amenity Space Requirements		
Unit No.	Required floor areas for communal amenity space	Communal amenity space required
One Bedroom (57 no.)	5sq.m	57 x 5sq.m = 285sq.m
Two Bedroom (103 no.)	7sq.m	103 x 7sq.m = 721sq.m
Three Bedroom (26 no.)	9sq.m	26 x 9sq.m = 234sq.m

Total 186 no. units	Total Communal amenity space required	1,240sq.m
	Total Communal amenity space area proposed	c. 1,366sq.m

Table 3.10 Table showing the total area of communal amenity space required

Based on the above requirements, the subject scheme requires **1,240q.m** of communal amenity space. The proposed development includes approximately **1,366sq.m** of quality open space at surface level which will be available for residents of both the apartment/duplex units and the proposed house units. This provision is well in excess of the minimum requirements stated above.

The guidelines also outline the following in relation to communal amenity space:

‘Communal amenity space may be provided as a garden within the courtyard of a perimeter block or adjoining a linear apartment block. Designers must ensure that the heights and orientation of adjoining blocks permit adequate levels of sunlight to reach communal amenity space throughout the year.’

In response to the above, we note that the proposed communal open space area will comprise appropriate landscaping and seating. The proposed development has been designed to ensure the open space areas serving the development receive adequate levels of sunlight to read communal amenity space throughout the year.

With respect to the proposed communal open space provision to serve the proposed Apartment and Duplex Units, we note that some of the communal spaces for some of the apartment and duplex units have been grouped together. This strategy evolved as some of the communal space requirements for the smaller blocks was considered insufficient to provide for a useable, functional space.

In the Flemington Park area for example, the two smaller apartment blocks would have a communal open space requirement of 42sq.m each. A space which is approximately the size of three car parking spaces. An enclosed landscaped area this size would not function. Whereas if the three blocks consolidated their communal open space, we are able to provide an enclosed safe environment of 222sq.m for Blocks FP1, FM1 and FM2.

- In accordance with the above, the communal open space requirement for the Apartment Blocks (FM1, FM2 and FP1) in Flemington Park is 170sq.m. As is demonstrated on the Open Space plan extract above, one shared communal open space area (**222sq.m**) has been provided adjacent to Block FM1 to serve all three blocks.
- The communal open space requirement for Duplex Block N1, N2, N3, N4 and M1 in Hampton Park North and Central is 170sq.m. A shared area comprising **189sq.m** has been provided to the east of Duplex Block N4.
- The communal open space requirement for Apartment Block HN1 in Hampton north is 86sq.m. An area of **87 sq.m** has been provided to the south of the block to satisfy this requirement.
- The communal open space requirement for Apartment Blocks HC1 and HC2 in Hampton Central is **132sq.m**. A shared communal open space area to the south of Block HC1 has been provided to satisfy this requirement.
- The communal open space requirement for Duplex Block R2 is 28sq.m, a significantly sized communal area to the west of the block, comprising an area of **116sq.m** has been provided to serve these units.
- The communal open space requirement for Duplex Blocks N5, N6 and Apartment Block M2 in Hampton Park north is 106sq.m. A shared area of **183sq.m** has been provided to satisfy this requirement to the east of Duplex Block N6.
- The communal open space requirement for Duplex Block R3 is 28sq.m, a significantly sized communal area to the west of the block, comprising an area of **132sq.m** has been provided to serve these units.

- The communal open space requirement for Duplex Blocks R4 and R5 is 56sq.m. A combined open space area comprising an area of **69sq.m** has been provided between both blocks to fulfil this requirement.
- The communal open space requirement for Apartment Block HS1 in Hampton South is 86sq.m. A communal open space area of **95sq.m** has been provided to the west of the block to satisfy this requirement.
- The communal open space requirement for Apartment Blocks R6 and R7 to the south of the site is 56sq.m. A communal open space area of **113sq.m** has been provided between both blocks to fulfil this requirement.
- The communal open space requirement for Duplex Block R8 is 28sq.m. A communal open space area of **28sq.m** has been provided in accordance with this requirement, to the west of the proposed block.

Security Considerations

Section 3.40 of the Guidelines recommend that in order to ensure visitor and occupant safety natural surveillance should be maximised for all streets, open spaces, play areas and any surface bicycle or car parking areas. Particular attention should be given to entrance points being well lit and overlooked in building blocks. Consideration should also be given to incorporating privacy strips in instances where ground floor apartments front onto public footpaths. The proposed development has been designed in a manner that allows for maximum natural surveillance throughout the development site, with windows overlooking all internal and external public spaces and is therefore consistent with the Guidelines in this regard.

The proposed development has been designed in a manner that also allows for maximum natural surveillance throughout the development site, with windows overlooking all internal and external public spaces and is therefore consistent with the Guidelines in this regard.

Bicycle Parking

The Guidelines seeks that the design of apartment schemes should ensure that bicycle parking spaces are located to be conveniently accessible to residents, both in terms of proximity to access points to apartments and routes to the external road / street network. The following requirements are also specified in relation to quantity:

Quantity – a general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units. Any deviation from these standards shall be at the discretion of the planning authority and shall be justified with respect to factors such as location, quality of facilities proposed, flexibility for future enhancement/enlargement, etc.

Based on the above requirements, the following number of bicycle parking spaces are required to serve the proposed development:

Total No. of Apartment/Duplex Units Proposed = 186 no.

Breakdown of Proposed Units = 57 one-bedroom units, 103 two-bedroom units, 26 three bedroom units

Total No. of Bedrooms = 341 no. bedrooms = 341 no. resident bicycle parking spaces required.

Total No. of Visitor Spaces Required = $186/2 = 93$

Total Resident and Visitor Bicycle Parking Spaces Required = 434 no.

In accordance with the above calculations, a total of 434 no. bicycle parking spaces are required on site. The proposed scheme includes the provision of a total of 2,014 no. bicycle parking spaces on-site,

including 1,326 no. resident parking spaces, 640 no. visitor parking spaces, and 48 no. spaces allocated to the proposed creche units. This provision is well in excess of the standards set out above, and is an effective measure of promoting active travel on-site.

Childcare Facilities

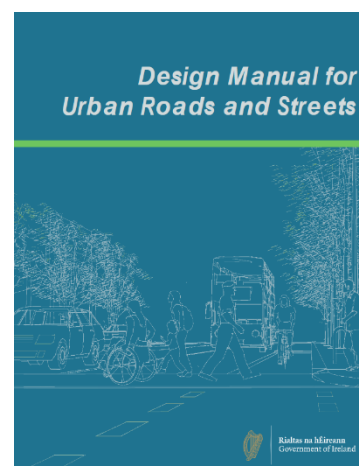
Having regard to the Planning Guidelines for Childcare Facilities (2001), the provision of one child-care facility (equivalent to a minimum of 20 child spaces) for every 75 dwelling units is recommended to be provided. Furthermore, Section 4.7 of the Apartment Guidelines (2022), states that the threshold for any such facilities in apartment schemes should be established having regard to the scale and unit mix of the proposed development and the geographical distribution of childcare facilities and the emerging demographic profile of the area. It is also considered that **one-bedroom or studio type units should not generally be considered to contribute to a requirement for any childcare provision.**

Having regard to the above, it is noted that the proposed development provides for a total of 186 no. apartment and duplex units and 378 no. dwellings. Of this provision, 57 no. apartment/duplex units are one-bedroom units. Removing these from the overall provision provides for a total of 507 no. two-and three bedroom dwellings and therefore would necessitate a requirement for c. 6 no. creche units. There are 3 no. sizeable creche units provided on site, which is considered sufficient to serve the needs of future residents, having regard to the existing capacity that is already available in the existing adjacent childcare facility. This is also discussed further in the Social Infrastructure Audit Report as prepared by Hughes Planning and Development Consultants, which accompanies this application.

It is considered that the proposed development is wholly compliant with all the required floor areas and room standards set out in the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2022). For full clarity, please refer to submitted floor plans and other technical drawings, and the Housing Quality Assessment document, all prepared by Ferreira Architects as part of this application.

3.3.10 Design Manual for Urban Roads and Streets (2013)

The proposed development has been designed having regard to the Design Manual for Urban Roads and Streets (2013). The Manual includes guidance and standards for constructing new and reconfigured existing urban roads and streets, whilst also setting out practical design measures to encourage more sustainable travel patterns in urban areas. The internal road network has been designed to deliver security to future pedestrians and cyclists, offering local streets with footpaths, shared surfaces, ramps and home zones. The movement function of each of the internal local streets has sought to respect the different levels of motorised traffic whilst catering for a higher number of pedestrians and cyclists. Ramps and plazas have been provided on the site which enhances pedestrian safety by slowing traffic and making the car subservient to the pedestrian and cyclist.



A DMURS Compliance Statement has been prepared by Martin Peters and Associates Consulting Engineers, in support of this application. This statement confirms that the proposed development complies with the requirements of DMURS. Please consult this report, which is provided under a separate cover for further details.

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

The proposed development is considered having regard to the Planning System and Flood Risk Management Guidelines for Planning Authorities (2009) in the Flood Risk Assessment Report, prepared by MPA Consulting Engineers. This is provided under a separate cover.

This report concludes that the subject site is located in Flood Zone C and therefore is suitable for development for vulnerable uses which includes dwelling houses. The report goes on to state that:

'It is clear from both the Stage 1 – Flood Risk identification and the Stage 2 – Initial Flood Risk Assessment that the site is Zone C and is not at risk of flooding and there is no requirement to carry out any Stage 3 Detailed Flood Risk Assessments.'

The Proposed site has been designed with SuDS based drainage systems in accordance with the GDSDS and adequate free board and flood routing is provided for the proposed dwellings to ensure that there is no flood risk from the urban drainage systems which are connected to the arterial drainage network and carry surface water away from the development to the Bremore Stream. '

For full details, please refer to the Flood Risk Assessment Report (FRA01) as prepared by MPA Consulting Engineers, which accompanies this application.

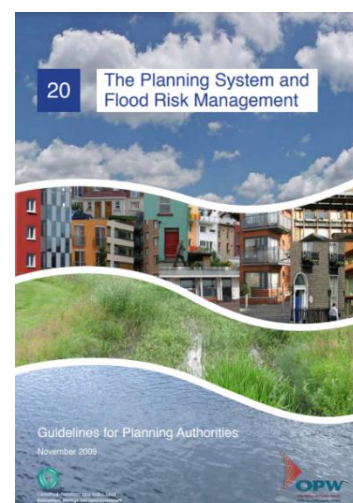
3.3.12 Smarter Travel: A Sustainable Transport Future - A New Transport Policy for Ireland (2009)

The purpose of the Smart Travel policy is to provide alternative to the use of the car through improved public transport services and investment in cycling and sustainable modes of transport. Within the above noted document, the Government has committed to reduce the total share of car commuting from 65% to 45%, a rise in non-car trips by 55% and that the total vehicle miles travelled by the car fleet will not increase. The policy document states that:

'to achieve the vision of a sustainable transport system, individual lifestyles will have to change and collectively we will have to work progressively on a range of solutions which deal with apparently conflicting goals: economic growth, reduced emissions, less use of motorised transport and better accessibility'

The 5 key goals of this transport policy are as follows:

- Improve quality of life and accessibility to transport for all and, in particular, for people with reduced mobility and those who may experience isolation due to lack of transport;
- Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;
- Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions;
- Reduce overall travel demand and commuting distances travelled by the private car; and,
- Improve security of energy supply by reducing dependency on imported fossil fuels.



The Smarter Travel Plan also provides that local authorities should ensure safe walking and cycling routes to and from schools and other educational institutions are identified and implemented.

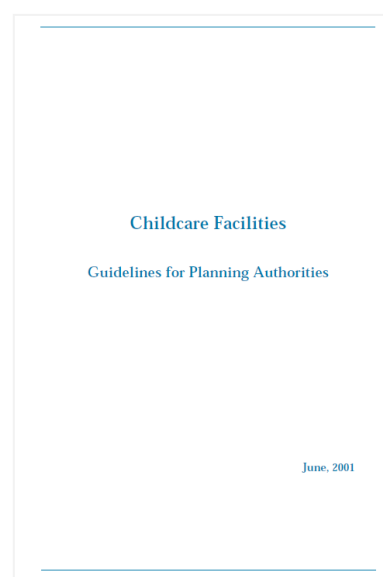
The proposed development complies with the key goals outlined within Smarter Travel: A Sustainable Transport Future. The subject site is located within 2.5 km of Balbriggan Train Station located to the western side of Balbriggan. There are also a number of bus stops within the immediate vicinity, the closest of which is at Clonard Cross (c. 1km from subject site). The bus routes which serve the site include Nos. 191, 101 X, 192 and B1. The development encourages cycling with 2,014 no. bicycle spaces being provided. It aims to encourage cycling which is a sustainable mode of transport, whilst the use of bus and rail provides alternative access to Dublin City Centre through the use of public transport.

3.3.13 Guidelines for Planning Authorities on Childcare Facilities (2001)

The Guidelines for Planning Authorities on Childcare Facilities (2001) indicate that Development Plans should facilitate the provision of childcare facilities in appropriate locations. These include larger new housing estates where planning authorities should require the provision of a minimum of one childcare facility with 20 no. places for each 75 no. dwellings. The threshold for provision should be established having regard to existing location of facilities and the emerging demography of the area where new housing is proposed. The Guidelines advise that sites should be identified for such facilities as an integral part of the pre-planning discussions.

The following definition of Childcare is included in the Guidelines:

In these Guidelines, "childcare" is taken to mean full day-care and sessional facilities and services for pre-school children and school-going children out of school hours. It includes services involving care, education and socialisation opportunities for children. Thus, services such as pre-schools, naíonraí (Irish language playgroups), day-care services, crèches, playgroups, and after-school groups are encompassed by these Guidelines. Conversely childminding, schools, (primary, secondary and special) and residential centres for children are not covered by these Guidelines.

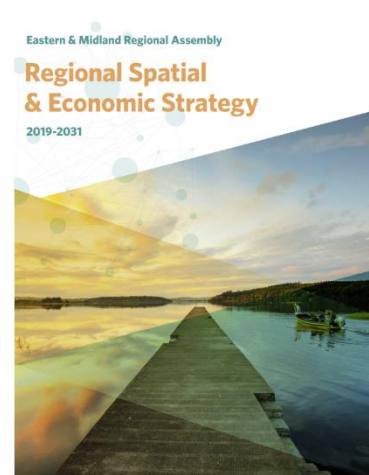


As set out on the architectural drawings accompanying this application, the proposed development includes the provision of 3 no. creche units, 1 within the Flemington Park Character Area (379 sq.m) 1 within the Hampton Park Central Character Area (354sq.m) and 1 no. within the Hampton North Character Area (494.6sq.m). These facilities comprise an overall area of c. 1,227.6sq.m, excluding the associated external play areas provided to serve each unit, which is considered an appropriate provision to serve the overall development.

The exact capacity of the proposed childcare facilities will only become apparent when an operator comes on board and will be subject to operator's particular requirements and will be dependent on what types of childcare facility are already available in the area. However, it is estimated that proposed childcare facilities could cater for in the order of 307 no. children having regard to an accepted industry average of c. 3 to 4sq.m gross floor space per child depending on the type of childcare offered by the end user. This generally complies with the minimum place requirements set out in the abovementioned guidelines. It is envisaged that parents will drop-off children on their way to work within the area or on-route to the public transport linkages available to the proposed development.

3.3.14 Regional Spatial and Economic Strategy for the Eastern and Midland Regions 2019-2031

The Regional Spatial and Economic Strategy for the Eastern and Midland Region (DRSES) was published in July 2019. A Regional Spatial & Economic Strategy (RSES) is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives. At this strategic level it provides a framework for investment to better manage spatial planning and economic development throughout the Region. The principal statutory purpose of the RSES is to support the implementation of Project Ireland 2040 and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the Regions. The RSES as adopted replaces Regional Planning Guidelines and is aimed at achieving the goals as set out in the National Planning Framework.



At the core of the RSES is the consideration of a settlement hierarchy for the Region, which outlines the key locations for population and employment growth, coupled with investment in infrastructure and services to meet those growth needs. The RSES build on the foundations of Government policy in Project Ireland 2040 and replaces the current Regional Planning Guidelines (RPGs).

As indicated in the map extract overleaf, Balbriggan is located within the 'Core Region' which includes the peri-urban hinterlands in the commuter catchment around Dublin, which covers the Mid-East counties of Louth, Meath, Kildare and Wicklow.

It is highlighted within the RSES that in excess of 550,000 people resided in the Core Region in 2016, it is expected that this figure has subsequently increased. It is also indicated that the Core Region contains some of the youngest and fastest growing towns in the state.

The key growth enablers for the Core Region as per the RSES, include the following:

- ***To promote continued growth at more sustainable rates, while providing for increased employment and improved local economies, services and functions to allow towns become more self-sustaining and to create the quality of life to attract investment.***
- ***Commensurate population and employment growth in Key towns, coupled with investment in enabling transport, infrastructure and services to facilitate the achievement of compact growth targets of at least 30% of all new homes to be within the existing built up area of settlements.***



Figure 3.3 Map extract from the RSES indicating the location of Balbriggan within the Core Region.

In addition to the above, the following Regional Policy Objectives (RPO's) are considered to be of relevance:

- RPO 3.2** *Local authorities, in their core strategies shall set out measures to achieve compact urban development targets of at least **50% of all new homes within or contiguous to the built-up area of Dublin city and suburbs** and a target of at least 30% for other urban areas*
- RPO 4.83** *Support the **consolidation of the town and village network** to ensure that development proceeds sustainably and at an appropriate scale, level and pace in line with the core strategies of the county development plans.*

The RSES also confirms that local authorities, in developing their core strategies and settlement hierarchies will consider the following growth enablers for every part of the Region to meet its potential including:

Compact Sustainable Growth – *Promote compact, sequential and sustainable development of urban areas from large to small to realise targets of **at least 50% of all new homes to be built, to be within or contiguous to the existing built-up area of Dublin city and suburbs, and a target of at least 30% for other urban areas.***

We would note that facilitating housing is critical to ensuring the sustainability, vitality and viability our towns and villages. Over the past years, Balbriggan has been subject to the sprawl of one-off housing within and outside of its core area, as such support for additional housing and compact growth within this settlement will aid in acting as a viable alternative to urban generated one-off housing, contributing to the principle of compact growth.

The RSES identifies Balbriggan as a Regional Growth Centre, which are defined as:

Large towns with a high level of self-sustaining employment and services that act as regional economic drivers and play a significant role for a wide catchment area.

The vision provided for Balbriggan in the RSES is that Balbriggan will act as a Regional Growth Centre with a population target in the region of **50,000 by 2031**. The plan also targets the compact and focused growth in the Regional Growth Centres of Balbriggan and Dundalk, growing them to a city scale, is also outlined as one of the growth enablers for the Dublin Belfast Corridor. Further to this, the Growth Strategy for the Eastern and Midland Region includes the following strategy in relation to Balbriggan:

'Target Growth of our Regional Growth Centres of Athlone, Balbriggan and Dundalk as regional drivers.'

The provision of a medium-high density residential development on the application lands is consistent with the above as it will provide housing to accommodate the population increase expected in Balbriggan moving forward and supporting its compact and sequential growth.

The RSES requires a Joint Urban Area Plan for Balbriggan, which Louth County Council and Meath County Council will be required to prepare following the adoption of the Regional Spatial & Economic Strategy. The absence of this Joint Urban Area Plan does not impede a decision being issued on an application for development within the Joint Urban Area Plan area in advance of this plan being prepared.

Given that the subject site is currently zoned for residential development and the ranking afforded the subject site, in relation to the prioritising of the release of residentially zoned land, in the Balbriggan Southern Environs Plan 2009-2015, it is anticipated that the subject site will be earmarked for residential development in the Joint Urban Area Plan for Balbriggan, which is therefore consistent with the proposed development being put forward for this site. The town of Balbriggan is also located along the North-South Corridor, with the forthcoming DART extension to Balbriggan, making the area more accessible via public transport and further unlocking the development potential of the wider area.

In addition to the above, Balbriggan will also be served by future BusConnects routes **including Local Route L85** which will operate from Balbriggan town centre to Dublin Airport, passing through Skerries, Loughshinny, Rush and Lusk.

The afore referenced public transport enhancements and improvements will have the effect of providing high quality public transport services to Dublin City and other key towns within north Dublin and the Metropolitan Area. The subject lands are ideally located to benefit from these improvements and are optimally situated, within proximity to existing and planned public transport services, to meet the key objectives of the RSES which includes the promotion of the compact and sustainable growth of Dublin's Key towns including Balbriggan.

3.4 Local Policy Context

This section of the report will examine the local planning policy framework, namely the Fingal Development Plan 2023-2029, which guides the use and development of the subject lands.

3.4.1 Fingal Development Plan 2023-2029

The Fingal Development Plan 2023-2029 was adopted by Elected Members in February 2023, and came into effect on 5th April 2023. This plan now supersedes the previous Fingal Development Plan 2017-2023.

The Core Strategy of the Fingal Development Plan 2023-2029 identifies Balbriggan as a 'Self-Sustaining Town' with a projected housing demand over the plan period of approximately 1,902 no. units. Balbriggan is noted as the largest of the Self-Sustaining Growth Towns in the core area which 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. Some of the high-level policies included within the Core Strategy which relate to Balbriggan include the following:



Policy CSP34 – Consolidate Growth of Self-Sustaining Towns

Consolidate the growth of Self-Sustaining towns including Malahide, **Balbriggan**, Lusk, Portmarnock, Rush and Skerries as set out in the Settlement Strategy for RSES and by encouraging infill development and compact growth rather than greenfield development and by intensification at appropriately identified locations.

Policy CSP37 – Promotion of Enterprise and Employment in Self-Sustaining Towns

Promote enterprise and employment throughout the County including along the Dublin Belfast Economic Corridor including Balbriggan and work with other Local Authorities to promote Fingal and the wider mid-eastern region as an engine for economic growth.

Policy CSP38 – Malahide, Balbriggan, Lusk, Portmarnock, Rush and Skerries

Consolidate development and protect the unique identities of the settlements of Malahide, Portmarnock, **Balbriggan**, Lusk, Rush and Skerries.

Objective CSO55 – Development and Growth of Balbriggan and Skerries

Promote and facilitate the development and growth of Balbriggan and Skerries as primary service, social, cultural and local tourist centres in north Fingal.

The proposed development is considered to accord with the above listed policies in that it seeks to consolidate development, on residentially zoned lands, within the development boundary of the town.

3.4.2 Land-Use Zoning

Referring to the land-use zoning map included in figure 107.0 overleaf, the majority of the subject site is zoned "RA" – Residential Area in the Fingal Development Plan 2023-2029, the objective associated with which is to 'provide for new residential communities subject to the provision of the necessary social and physical infrastructure'.

The vision for the 'RA' zone set out in the development plan is as follows:

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

Permissible uses for 'RA' zoned lands as per the current plan, are as follows:

Permitted in Principle: 'RA' – Residential Area		
<i>Bed and Breakfast</i>	Childcare Facilities	<i>Community Facility</i>
<i>Education</i>	<i>Funeral Home/Mortuary⁹</i>	<i>Guest House</i>
<i>Health Centre</i>	<i>Health Practitioner</i>	<i>Hospital</i>
<i>Office Ancillary to Permitted Use</i>	<i>Office ≤ 100 sqm⁹</i>	<i>Office > 100 sqm and < 1,000 sqm¹¹</i>
Open Space	<i>Place of Worship</i>	<i>Public Houses</i>
<i>Public Transport Station</i>	<i>Recreational/Sports Facility</i>	Residential
<i>Residential Care Home/ Retirement Home</i>	<i>Restaurant/Café⁹</i>	<i>Retail – Local < 150 sqm nfa</i>
Retail – Convenience ≤ 500 sqm nfa⁹	Retail – Comparison ≤ 500 sqm nfa⁹	<i>Retail – Supermarket ≤ 2,500 sqm nfa⁹</i>
<i>Retirement Village</i>	<i>Sheltered Accommodation</i>	<i>Sustainable Energy Installation³⁵</i>
<i>Taxi Office</i>	<i>Traveller Community Accommodation</i>	<i>Utility Installations</i>
<i>Veterinary Clinic</i>		

Table 3.11 Table of permissible uses for sites zoned 'RA' – Residential Area (Draft Fingal Development Plan 2023-2029)

As is evident from the zoning matrix included in Table 4.0 **residential** is a permitted use within 'RA' zoned lands as well as childcare facilities, open space and retail, all of which featured as part of the proposed development.

The proposed development fully accords with the objective and vision of the 'RA' Zone. The proposed development for 564 no. dwellings and apartments/duplex units are considered high quality new residential development located within proximity to the town of Balbriggan and the local services and amenities. The proposed development is therefore considered to be an appropriate residential development given the available social and physical infrastructure within Balbriggan.

The western portion of the subject site, which includes the proposed Class 1 Open Space Area is zoned 'OS' – *Open Space* the objective associated with which is to '*Preserve and provide for open space and recreational amenities*', with the vision for lands zoned as such being 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 proposed land use on the 'OS' zoned portion of the subject lands is Class 1 Open Space in the form of a playing pitch. This pitch will be available to serve both the residents of the proposed scheme and existing residents occupying neighbouring schemes.



Figure 3.4 Extract from Fingal Development Plan 2023-2029 Zoning Map (Sheet No. 4) with application site outlined in black.

The above zoning map also indicates the Balbriggan Ring Road R122 to R132 Road Proposal, which traverses the subject lands in a north south direction. The layout of the proposed development has been informed by the topography of the subject site and the 'c-ring road' alignment identified above. A significant portion of this road proposal will be delivered as part of the subject development, which will bring about significant benefits for the future of Balbriggan.

The zoning map extract above also identifies a number of archaeological features within or adjacent to the red-line boundary (indicated with pink stars). The presence of these features have been carefully considered as part of the subject proposal and are discussed further in the accompanying EIAR Chapter, Archaeological Testing Report and Cultural Heritage Mitigation Maps as prepared by Courtney Deery Archaeology & Cultural Heritage Consultants.

3.4.3 Sustainable Placemaking and Housing Growth

Section 3 of the Fingal Development Plan 2023-2029 sets out the strategy to guide successful placemaking and ensure quality housing within Fingal over the lifetime of the Development Plan and into the future. It is noted that the concept of placemaking and the provision of quality homes are not mutually exclusive and the success of both in providing for sustainable, resilient communities is inter-dependent. The relevant policies and objectives as comprised within the Development Plan, relating to housing are set out below:

Objective SPQHO8 – Consolidated residential development

Consolidate within the existing urban footprint, by ensuring of 50% of all new homes within or contiguous to the built-up area of Dublin City and Suburbs and 30% of all new homes are targeted within the existing built-up areas to achieve compact growth of urban settlements, as advocated by the RSES.

Objective SPQHO9 – New residential development

Focus new residential development on appropriately zoned lands within the County, within appropriate locations proximate to existing settlement centres where infrastructural capacity is readily available, and along existing or proposed high quality public transport corridors and active travel infrastructure in a phased manner alongside the delivery of appropriate physical and social infrastructure.

Policy SPQHP29 – Social, Affordable and Cost Rental Housing

Promote the provision of social, affordable and cost rental housing in accordance with the Fingal County Council Housing Strategy, Part V of the Planning and Development Act 2000 (as amended) by the Affordable Housing Act 2021 and government policy as outlined by the Department of Housing Local Government and Heritage Housing for All Housing Plan to 2030.

Policy SPQHP34 – Quality of Residential Development

Promote a high quality of design and layout in new residential developments at appropriate densities across Fingal, ensuring high-quality living environments for all residents in terms of the standard of individual dwelling units and the overall layout and appearance of developments. Residential developments must accord with the standards set out in the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, DEHLG (2009) and the accompanying Urban Design Manual – A Best Practice Guide and the 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.

Objective SPQHO33 – Integration of residential development

Encourage higher residential densities where appropriate ensuring proposals provide for high quality design and ensure a balance between the protection of existing residential amenities and the established character of the surrounding area with a target minimum amount of 15% amount of green space, tree coverage and public space associated with every residential area.

Policy SPQHP37 – Compact Growth, Consolidation and Regeneration

Promote compact growth in line with the NPF and RSES through the inclusion of specific policies and targeted and measurable implementation measures that: “Encourage infill/brownfield development Focus growth on the County’s designated strategic development areas identified in the Metropolitan Area Strategic Plan” Promote increased densities along public transport corridors.

Objective SPQHO36

Promote residential consolidation and sustainable intensification at appropriate locations, through the consolidation and rejuvenation of infill/brown-field development opportunities in line with the principles of compact growth and consolidation to meet the future housing needs of Fingal.

Objective SPQHO37

Promote residential development at sustainable densities throughout Fingal in accordance with the Core Strategy, particularly on vacant and/or under-utilised sites having regard to the need to ensure high standards of urban design, architectural quality and integration with the character of the surrounding area.

It is contended that the proposed development positively response to the above policies in that it makes efficient use of zoned lands within the development boundary of Balbriggan by providing a sustainable residential density, which promotes the consolidation of development within the development boundary of the town.

3.4.4 Design Criteria for Residential Development (Fingal Development Plan 2023-2029)

Section 14.6 of the Fingal Development Plan 2023-2029 sets out the general requirements for residential development in Fingal, including standards for new housing, as well as guidance in relation to other aspects of residential development.

With regards to unit sizes Section 14.6.4 of the Development Plan states that the minimum size of habitable rooms for houses/apartments and flats shall conform with appropriate National guidelines and standards in operation at the date of application for planning permission. It is further stipulated that applications for residential development will be required to demonstrate compliance in terms of room sizes, storage space, dimensions and overall floor areas as set out in the:

- “Quality Housing for Sustainable Communities Guidelines”, DEHLG (2007)
- “Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas” (2009), the companion “Urban Design Manual – A Best Practice Guide”, DEHLG (2009),

Each of the above documents, including the standards set out within are discussed in the preceding sections of this report. An assessment of the proposed units against the space standards and requirements of these documents has been provided above and it has been adequately demonstrated that the scheme fully complies with these requirements.

Design Statements

Section 14.4.2 ‘High Quality Urban Design’ and Objective DMS05 provides guidance in respect of the design and layout of residential development as follows:

Objective DMS03 *All medium to large scale planning applications (in excess of 5 residential units or 300sq.m of retail/commercial/office development in urban areas) or as otherwise required by the Planning Authority shall be accompanied by a Design Statement to address the contextual and design issues which have been taken into consideration as part of the scheme.*

A Design Statement Shall:

- *Explain the design principles and design concept.*
- *Demonstrate how the twelve urban design criteria (as per the 'Urban Design Manual - A Best Practice Guide') have been taken into account when designing schemes in urban areas. Each of the twelve criteria is of equal importance and has to be considered in an integrated manner.*
- *Outline how the development meets the Development Plan Objectives, and the objectives of any Local Area Plan, Masterplan, Urban Centre Strategy, Framework Plan or other similar Plan affecting the site.*
- *Include photographs of the site and its surroundings.*
- *Include other illustrations such as photomontages, perspectives, sketches.*
- *Outline detailed proposals for open space and ensure the provision of open space is designed in from the beginning when designing a new scheme.*
- *Outline a detailed high-quality open space and landscape design plan including specifications, prepared by suitably qualified professionals.*
- *Outline how Green Infrastructure integrates into the scheme.*

- *Demonstrate how the proposed scheme contributes in a positive manner to the public realm and to the local context.*
- *Provide detail in relation to all intended finishing materials to be applied throughout the scheme, including an overall materials palette demonstrating suitability for the scheme, its context and the streetscape.*

This current design has been developed by Ferreira Architecture. The urban design strategy envisages a series of residential streets and character areas with two to three-storey housing, duplex and apartment units. The scheme provides for a varied mix of dwelling types and sizes in order to accommodate various housing needs.

Within the application site, there will be consistency in materials, colour, proportions, roof pitches, building details, street/route surfaces, planting and seat furniture within each Character Area, and with the addition of Landscape, this will lead to areas which are easily distinguishable, legible and clearly definable. In accordance with the requirements of Objective DM5O5 above, we refer the Planning Authority to the Design Statement, Character Areas Statement and Universal Design Statement as prepared by Ferreira Architects and included as part of this application.

Residential Density

As noted in the Fingal Development Plan 2023-2029, Section 3.5.11.3 relates to density and states that *'Fingal County Council will support higher densities in appropriate locations in accordance with the NPF, RSES and Guidelines issued under Section 28 of the Planning and Development Act, 2000 (as amended).* In addition, the Development Plan states that in determining densities, *'regard should be given to Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas 2009 and its companion document Urban Design Manual – A Best Practice Guide.'*

As such, densities for residential developments are to adhere to a variety of documents with emphasis placed on design, heights, plot ratio, and potential of the area to accommodate residential intensification.

Section 14.5 of the Development Management Standards is specifically related to the *'Consolidation of the Built Form: Design Parameters'* and Section 14.5.2 – *'Building Density'* of the Development Plans reiterates the following with relation to density:

'The Plan promotes compact growth and consolidation of Fingal's large urban areas, towns and villages and will support appropriate densities as expressed in national and regional policies NPF, RSES and the Section 28 Guidelines. In complying with national guidance, development proposals must also be cognisant of and respect the character, context and architectural qualities of the surrounding area and seek to ensure in all instances a high-quality architectural response to site development.'

Again, this is further alluded to in Section 14.6.3 – *'Residential Density'* which states:

'In general, the density and number of dwellings to be provided within residential schemes should be determined with reference to Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas 2009. Development should also be consistent with the policies and objectives set out in Chapter 3 Sustainable Placemaking and Quality Homes and should promote appropriate densities, having regard to factors including the location of the site, accessibility to public transport and the principles of sustainability, compact growth and consolidation.'

In accordance with the above policy content, we make reference to Section 5.11 of the 2009 Guidelines *'Sustainable Residential Development in Urban Areas'* which relates to development on *'Outer Suburban/Greenfield Sites'* and states that *'the greatest efficiency in land usage on such lands will be achieved by providing net residential densities in the general range of **35-50 dwellings per hectare** and such densities (involving a variety of housing types where possible) should be encouraged*

generally. Development at net densities less than 30 dwellings per hectare should generally be discouraged in the interests of land efficiency, particularly on sites in excess of 0.5 hectares.’

The proposed development provides for a net residential density of **35.13 dwellings per hectare**, based on a net site area of 16.057 hectares. This fully accords with the provisions set out above and as such, should be considered acceptable by the Planning Authority.

Unit Mix

Section 14.6.2 of the current plan has regard to housing mix and provides that the Council will support the provision of a mix of housing within Fingal, creating a range of tenure and typology options and will discourage undue segregation and over provision of a single tenure type. It is further stipulated that residential applications should include:

- A dwelling mix providing a balanced range of dwelling types and sizes to support a variety of households;
- A detailed breakdown of the proposed unit type and size including a percentage split between one, two, three and four bedroom units;
- A statement outlining how the scheme has been designed to meet the needs of older people/or persons with a disability and/or lifetime homes.
- On smaller infill sites, a mix of dwellings which contribute to the overall dwelling mix in the locality.

In response to the above policy content, we refer the Planning Authority to the Housing Quality Assessment (HQA) and the Universal Design Statement as prepared by Ferreira Architects which provides further clarity in terms of the proposed unit mix provided on site. In summary we note that the scheme provides for a total of 564 no. residential units broken down as follows:

Total No. of Residential Units	546 no.(Total)			
	<i>House Units</i>	<i>Duplex Units</i>	<i>Apartment Units</i>	
	378 no.	84 no.	102 no.	
	Unit Mix			
	<i>One-Bedroom Units</i>	<i>Two-Bedroom Units</i>	<i>Three-Bedroom Units</i>	<i>Four-Bedroom Units</i>
	57 no. 10.1%	230 no. 40.8%	263 no. 46.6%	14 no. 2.5%

On the basis of the above figures, we submit that the proposed development provides for an appropriate mix of dwellings which will cater for a wide demographic.

Public Open Space Requirements

With regards to Public Open Space provision, **Objective SPQH – Public Open Space** of the plan states the following:

‘Public open space provision in new residential developments must comply with the quantitative and qualitative standards set out in Chapter 14 Development Management Standards.’

In accordance with the above objective, we refer to Section 14.13 of the plan entitled ‘Open Space’ which affirms that the provision of accessible open space is an integral part of the provision of high-quality green infrastructure for communities and forms a core element in the emerging Green Infrastructure Strategy for the County. In terms of the required quantities of public open space, **Objective DMSO51** of the plan states that the Planning Authority requires:

‘a minimum public open space provision of 2.5 hectares per 1000 population. For the purposes of this calculation, public open space requirements are to be based on residential units with an

agreed occupancy rate of 3.5 persons in the case of dwellings with three or more bedrooms and 1.5 persons in the case of dwellings with two or fewer bedrooms.’

The following table and objectives are also of particular relevance:

Land use	Minimum public open space standards
Overall standard	2.5 hectares per 1000 population
New residential development on greenfield sites/LAP lands	12% - 15% of site area
New residential development on infill/ brownfield sites	12% of site area

Figure 3.5 Extract from Table 14.12: Recommended Quantitative Standards (FCC Development Plan 2023-2029)

Objective DMSO53 *Require minimum open space, as outlined in Table 14.12 for a proposed development site area (Target minimum amount of 15% except in cases where the developer can demonstrate that this is not possible, in which case the 12% to 15% range will apply) to be designated for use as public open space. The Council has the discretion to accept a financial contribution in lieu of the remaining open space requirement to allow provision for the acquisition of additional open space or the upgrade of existing parks and open spaces subject to these additional facilities meeting the standards specified in Table 14.11. Where the Council accepts financial contributions in lieu of open space, the contribution shall be calculated on the basis of 25% Class 2 and 75% Class 1 in addition to the development costs of the open space.*

With regards to the proposed scheme on the subject lands, a total provision of 5.1 hectares of Class 1 and Class 2 public open space is available. The precise breakdown is as follows:

Proposed Public Open Space Provision	
POS	Area
Class 1 POS	
Grass Pitch	2.86 ha
Total Class 1 POS	2.86 ha
Class 2 POS	
POS 1	1,172sq.m
POS 2	1,376sq.m
POS 3	560q.m
POS 4	10,671sq.m
POS 5	1,450sq.m
POS 6	1,621sq.m
POS 7	1,483sq.m
POS 8	608sq.m
POS 9	2,013sq.m
POS 10	736sq.m
POS 11	938sq.m
Total Class 2 POS	22,682sq.m (2.268 ha)
Total Public Open Space Provision	5.1hectares
% Of Overall Site Area (5.1ha / 22.62ha)	c. 23%
% Of Residential Total Residential Area (5.1ha / 19.28ha)	c. 27%

Total POS Provision = 5.1ha (100%)	
Class 1 – 2.86ha = 56%	Class 2 – 2.268 ha = 44%

Public Open Space Calculation by Population (Objective DMS051)				
Dwelling Type	No. of Dwellings	Occupancy Role	Calculation	Total Occupancy
3+ bed dwellings	277	3.5 persons	277 X 3.5	969.5
1 or 2-bed dwellings	287	1.5 persons	287 X 1.5	430.5
Total	554			1,400
Required Open Space Area based on 2.5 hectares per 1,000 population	1,400 x 2.5 = 3,500 / 1,000 = 3.5ha Total			
	Required Class 1 (75%) = 2.625ha Class 1 Required On Site			
	Required Class 2 (25%) = 0.875ha Class 2 Required On Site			

In accordance with the tables above, the proposed public open space provision on site (5.1ha total) complies with the 15% requirement for greenfield sites and the overall standards of 2.5 hectares per 1000 population as per Table 14.12 of the Fingal Development Plan. On the basis of the above, the quantum of public open space provided should be considered sufficient by the Planning Authority.

Objective DMS055 *The Class 1 Open Space conditioned as part of a residential development shall be transferred to / taken in charge by the Council and or made available for use by the public in tandem with the occupation of the related residential development.*

Our clients have no objection to the Class 1 pitch being taken in charge on the subject site and will collaborate with Fingal County Council in order to ensure a smooth hand over.

Objective DMS056 *Ensure every home within a new residential scheme is located within 150 metres walking distance of a pocket park, small park, local park, urban neighbourhood park or regional park.*

We confirm that all dwellings on site are located within a 150 metre walking distance of a public or communal landscaped open space, please consult the Landscape Design Drawings as prepared by IS Design which accompany this application.

Objective DMS063 *Ensure open spaces are not located to the side or the rear of housing units.*

Conscious efforts have been made by the project Architect and Landscape Architect to ensure that public and communal open spaces are appropriately overlooked. Dwelling frontages have been orientated to face the proposed open space areas throughout the scheme. Please refer to the proposed Site Layout Plan and Landscape Plans which accompany this application for further clarity.

Objective DMS064 *Ensure open space provision is suitably proportioned and inappropriate narrow tracts are not provided.*

In response to the above objective, we note that all public open space areas proposed are sizeable in nature. Avoiding the provision of small, unfunctional pockets of space has been a foremost consideration in the preparation of the proposed site layout. In the spirit of this objective, the Planning Authority will note that some of the communal open spaces have been grouped together for the apartment and duplex units. Further details on the proposed public open space provision will be provided in the following latter sections of this report and can also be found within the Architectural and Landscape packs which accompany this application.

Please also refer to the enclosed Landscape Design drawings, and the Landscape Report prepared by IS Landscape Design for further details on the proposed open spaces.

Open Space and Green Infrastructure

The application is accompanied by a detailed Landscape Statement, created by IS Design. The design team wish to confirm that the design of the landscaping is in accordance with Fingal County Council's Development Plan and in particular the following policies and objectives:

- Table 4.2 of the Development Plan
- **Objective DMSO5** which requires the applicant to submit a detailed design statement for developments in excess of 5 residential units or 300sq.m of retail/commercial/office development in urban areas.

An Architectural Design Statement and Universal Design Statement has been prepared by Ferreira Architects and are enclosed with this LRD application.

- **Objective DMSO17** which seeks to locate, where possible, new utility structures such as electricity substations and telecommunication equipment cabinets, should not be located adjacent or forward of the front building line of buildings or on areas of open space.

The proposed development provides for 2 no. ESB substations located to the south and northeast of the subject lands. The ESB to the northeast is located immediately to the north of 4 no. car parking spaces, south and west of the adjoining access roads and to the west of public open space but not within the open space area. The proposed ESB substation to the south is located adjoining the access roads and thus the proposal is in accordance with Objective DMSO17.

- **Objective DMSO60** which states that the Council will require that open space be provided in a form and layout which facilitates maintenance.

The proposed open space is of a form and layout that facilitates easy maintenance.

- **Objective DMSO61** which states that the design of areas to be taken in charge as public open space should vary according to the density of the development. The design of areas to be taken in charge as public open space should vary according to the density of the development. More ornate and maintenance intensive designs are not appropriate to low density development.

The proposed development proposes a variety of open space areas, roadways and pedestrian and cycle paths to be taken in charge, these areas can be appropriately maintained by the Planning Authority once taken in charge. For full details please see the Taking in Charge drawing as prepared by Ferreira Architects which accompanies this application.

- **Objective GI 19** seeks to protect, preserve and ensure the effective management of trees and groups of trees.

The proposed development has been designed to protect and preserve as many trees/hedgerows as possible on this subject lands. Please consult the Landscape Design Report as prepared by IS Design Landscape Architects for full details in this regard.

- **Objective DMSO126** - 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.

A tree protection plan and Arboricultural report as prepared by Charles McCorkell accompanies this LRD application and provides further details on the protection of existing trees/hedgerows during the course the development.

- **Objective GI 21** - Require the use of native planting where appropriate in new developments in consultation with the Council. Indigenous, non-invasive species should be considered to provide habitat for locally occurring fauna ensuring, at a minimum, there should be no net loss of the tree and hedgerow resource.

The proposed development proposes native planting as set out in the enclosed plans prepared by IS Design Landscape Architects.

- **Objective GI 18** - Ensure trees, hedgerows and other features which demarcate townland boundaries are preserved and incorporated into the design of developments.

The proposed development has been designed to protect and preserve as much as possible of any trees/hedgerows on this subject lands.

- **Objective DMSO129** - Consider in tree selection the available rooting area and proximity to dwellings or business premises particularly regarding shading of buildings and gardens.

The proposed development proposes appropriate tree planting as set out in the enclosed plans prepared by IS Design Landscape Architects.

- **Objective DMSO130** Promote the planting of large canopy trees on public open space and where necessary provide for constructed tree pits as part of the landscape specification.

Please refer to the enclosed landscape proposals confirming the schemes compliance with Objective DMSO130.

- **Objective DMSO132** - Ensure roadside verges have a minimum width of 2.4 metres at locations where large trees are proposed and where necessary provide for constructed tree pits as part of the landscape specification. Road verges shall be a minimum of 1.2 metres wide at locations where small canopy trees are proposed.

Please refer to the enclosed landscape proposals confirming compliance with Objective DMSO132.

- **Objective DMSO138** - Ensure all development and infrastructure proposals include measures to protect and enhance biodiversity leading to an overall net biodiversity gain.

The proposed development has been designed to conserve and sustainably use biodiversity.

- **Objective GINHP20** - Protect the ecological corridor function along rivers by including mammal ledges or tunnels in new bridges over any of the main rivers: Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Ballyboghil, Corduff, Matt and Delvin. New bridge structures will also cater for Dipper boxes and Bats where possible. Where new road infrastructure crosses significant urban ecological corridors, tunnels shall be installed underneath the road to facilitate movement of small mammals and amphibians.

The proposed development is located within Balbriggan and not within the catchment of the aforementioned rivers. The proposed development does not impact on ecological corridors.

- **Objective GI 6** - Require Appropriate Assessment (AA) Screening for any development, plan or project including changes to the landscape, within the Ecological Buffer Zone. This will include any changes to existing or future layout, materials or management.

In accordance with the above objective, we note that this LRD application is accompanied by an AA Screening Assessment as prepared by Altomar Environmental Consultants, which is provided under a separate cover.

- **Objective DMSO2** - Ensure that all development projects within the County that are below the mandatory thresholds for Environmental Impact assessment, which could individually or in combination with other projects have significant effects on the environment are subject to EIA Screening.

The LRD application is accompanied by an EIAR and Screening for Appropriate Assessment.

In accordance with Objectives **SPQHP36, SPQHP37, SPQHO35 and SPQHO36** proposed open space areas have been designed to be accessible to all. Permeability between the open spaces has also been carefully considered with multifunctional spaces provided. All Class 2 open spaces have been designed to ensure passive surveillance is provided. Overall, it is submitted that the proposed open spaces accord with the requirements of the Development Plan.

Private Open Space Requirements

All residential units, be they traditional type housing or apartments, are to be provided with private open space. Open space standards will set out qualitative and quantitative standards so as to ensure that the maximum benefit is derived from the open space. The Fingal Development Plan 2023-2029 outlines the following objectives in relation to private open space.

Objective DMSO27 *Ensure a minimum open space provision for dwelling houses (exclusive of car parking area) as follows:*

- *3 bedroom houses or less to have a minimum of 60 sq. m. of private open space located behind the front building line of the house.*
- *Houses with 4 or more bedrooms to have a minimum of 75 sq. m. of private open space located behind the front building line of the house.*

Narrow strips of open space to the side of houses shall not be included in the private open space calculations.

The following standards are outlined within the current plan in respect of private open space provision for duplex/apartment units:

Unit type	Private amenity space	Communal amenity space
Studio	4 sq. m.	4 sq. m.
One bed	5 sq. m.	5 sq. m.
Two bed	7 sq. m.	7 sq. m.
Three bed	9 sq. m.	9 sq. m.

Figure 3.6 Extract from Table 14.14 of the Fingal Development Plan 2023-2029 'Open Space requirement for Apartment and Duplex Units.

In response to the above objectives, we note that the proposed site layout plan submitted with this application indicates the amount of private open space to be provided to the rear of each house unit. As identified on the plans, all private open space to the rear of each property achieves a minimum of 60sq.m. The proposed 4-bedroom units (House Type H) are provided with private amenity spaces with a minimum area of 75sq.m.

With regards to the proposed apartment and duplex units, we include a table below which demonstrates the schemes compliance with the open space requirements set out in table 14.14 of the development plan.

Minimum private open space requirements		
Unit Type	Required floor areas for private amenity space	Total provision of private open space
One Bedroom	5sq.m	5.3sq.m- 40sq.m
Two Bedroom	7sq.m	7.2sq.m – 60sq.m
Three Bedroom	9sq.m	19.4sq.m – 60sq.m

Table 3.12 Table showing the provided floor areas for private open spaces per apartment/duplex type

Car Parking Provision

Car parking standards provide a guide to the number of required off street parking acceptable for new developments. The car parking standards for both residential and non-residential land uses are set out in Table 14.19 of the Development Plan. The site is not located within 0.8km of a ‘spine route’ BusConnects stop or within 1.6km of an existing or planned Luas/DART/Metro Rail Station or on lands zoned Major Town Centre. Therefore, the site is located in Zone 2, for the purposes of car parking zones.

Table 14.19 of the Fingal County Development Plan 2023-2029 outlines the car parking standards for land uses on Zone 2 lands. The relevant standards are as follows:

- Residential (1 - 2 bedroom) 1 plus 1 visitor space per 5 units
- Residential (3 – 3+) 2 plus 1 visitor space per 5 units
- Pre-school facilities/creche 0.5 per classroom
- Retail 1 per 20sqm

According to the above table, the submitted scheme requires the following car parking spaces:

Residential Car Parking Requirement			
One-Bedroom Units	Two-Bedroom Units	Three-Bedroom Units	Four-Bedroom Units
57 no.	230 no.	263 no.	14 no.

Total Residential Spaces Required for 1 and 2 bedroom units = 287 x 1 = 287 Resident spaces

Total Visitor Spaces Required for 1 and 2 bedroom units = 287/5 = 57.4 x 1 = 57.4 Visitor spaces

Total Residential Spaces Required for 3/3+ bedroom units = 277 x 2 = 554 Resident spaces

Total Visitor Spaces Required for 3/3+ bedroom units = 277/5 = 55.4 x 1 = 55.4 visitor

Total Residential Spaces Required for 3/3+ bedroom units = 277 x 2 = 554 Resident spaces
Total Visitor Spaces Required for 3/3+ bedroom units = 277/5 = 55.4 x 1 = 55.4 Visitor spaces

Total No. of Residential Spaces Required = 841 no. Resident Spaces
Total No. of Visitor Spaces to Serve Residential Units = 112.8 Visitor Spaces

Creche Car Parking Requirements

3 no. Creches Proposed with 3 no. rooms in each = 4.5 spaces (1.5 spaces per creche)

Commercial Units Car Parking Requirement

9 no. Commercial Units Proposed – Overall Gross Floor Area = 593.2sq.m

593.2sq.m/20 = 29.66 car parking spaces

Total Car Parking Required (Residential + Visitor + Creche + Commercial) = 988 no. spaces

As per the calculations outlined above, the proposed development necessitates a requirement for 988 no. car parking spaces. The proposed development includes a total of 927 no. spaces, 806 no. of which are resident parking spaces, 94 no. of which are visitor parking spaces, 11 no. of which are accessible parking spaces, 7 no. spaces which are allocated to the proposed creche units, and 9 no. set down spaces.

The car parking provision for the proposed development has will be formulated by considering the urban location of the subject site, which is served by an established public transport network. The subject site is located within a significant settlement within Fingal, is well served by public transport (rail and bus services) and pedestrian and cyclist connectivity. The development plan also includes policies and objectives to encourage the use of public transport and to limit the proliferation of the private car and it is considered that the proposed development is consistent with these. It is considered that the 927 car parking spaces (including set down spaces) is sufficient to serve the proposal. Additional bicycle and motorcycle parking spaces have also been provided. Please refer to the engineering documents enclosed with this request for further details.

Bicycle Parking Provision

The bicycle parking standards for both residential and non-residential land uses are set out in Table 14.17 of the Development Plan. The relevant standards are as follows:

	<u>Long-Stay</u>	<u>Short-Stay</u>
● Residential (1 - 2 bedroom)	1, plus 1 per bedroom	0.5 per unit (apartments only)
● Residential (3 – 3+)	2, plus 1 per bedroom	0.5 per unit (apartments only)
● Pre-school facilities/creche	1 per classroom	5 per classroom
● Retail	1 per 100sqm	1 per 80sqm

According to the above table, the submitted scheme requires the following bicycle parking spaces:

Residential Bicycle Parking Requirement

One-Bedroom Units	Two-Bedroom Units	Three-Bedroom Units	Four-Bedroom Units
57 no.	230 no.	263 no.	14 no.

Total Residential Long -Stay Spaces Required for 1 bedroom units = (1 per one bedroom unit, plus one per bedroom) $57 + 57 = 114$ no. spaces

Total Residential Long-Stay Spaces Required for 2 bedroom units (2 per two bedroom unit, plus one per bedroom) $(230) + (230 \times 2) = 690$ no. spaces

Total Residential Long-Stay Spaces Required for 3 bedroom units (2 per three bedroom unit, plus one per bedroom) = $(263 \times 2) + (263 \times 3) = 1,315$ spaces

Total Long-Stay Spaces Required for 4 bedroom units (2 per four bedroom unit, plus one per bedroom) = $(14 \times 2) + (14 \times 4) = 84$ spaces

Total No. of Resident Long – Stay Spaces Required = 2,203

**Visitor Short-Stay Spaces = 0.5 spaces per unit (for apartment blocks only)
186 no. duplex/apartment units provided in total (57 no. one bedroom, 103 no. two bedroom and 26 no. three bedroom) – $186/2 = 93$ no. visitor Short-Stay Cycle Spaces**

Creche Bicycle Parking Requirement

Long Stay Spaces (1 per classroom) = 9 classrooms in total (9 no. Long Stay Spaces Required)

Short Stay Spaces (5 per classroom) = 9 classrooms in total (9x5=45 no. Short Stay Spaces Required)

Commercial Units Bicycle Parking Requirement

Long Stay Spaces (1 per 100sq.m) = 9 no. Commercial Units Proposed – Overall Gross Floor Area = 593.2sq.m

$593.2\text{sq.m}/100\text{sq.m} = 5.932$ Long Stay Spaces

Short Stay Spaces (1 per 80sq.m) = 9 no. Commercial Units Proposed – Overall Gross Floor Area = 593.2sq.m

$593.2\text{sq.m}/80\text{sq.m} = 7.415$ Short Stay Spaces

Total Bicycle Parking Required (Residential + Visitor + Creche + Commercial) = 2,363 spaces

As per the calculations outlined above, the proposed development necessitates a requirement for 2,363 no. bicycle parking spaces. The proposed development includes a total provision of 2,014 no. bicycle spaces, this is inclusive of 1,326 no. residential spaces, 640 no. visitor spaces and 48 no. spaces to serve the proposed creche units. Whilst this deviates slightly from the above requirements, it does not include the bicycle spaces that are provided for detached or semi-detached units within the rear garden space. Overall it is considered that this provision is entirely adequate to serve the proposed development. For further details on the proposed bicycle parking provision, please refer to the Traffic and Transport Assessment and Mobility Management Plan as prepared by MPA Consulting Engineers, in support of this application.

Refuse Storage and Bins

The following objective in the Development Plan is relevant with respect to refuse storage and bins:

Objective DMSO239 *Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened or other such mitigation measures are provided.*

Bin Storage is indicated to serve the proposed duplex/apartment and mid terrace units on the proposed site layout plan. This drawing includes boundary treatment details, showing the location of bin storage. Please refer to the architectural drawing pack as prepared by Ferreira Architects for full details.

Separation Distances

The Fingal Development Plan 2023-2029 states that a minimum distance of 22m between opposing first-floor windows must be achieved in each proposed dwelling. The proposed development successfully achieves this required distance between each proposed residential unit. The following Objective is relevant in this regard.

Objective DMSO23 *A separation distance of a minimum of 22 metres between directly opposing rear first floor windows shall generally be observed unless alternative provision has been designed to ensure privacy. In residential developments over three-storeys in height, minimum separation distances shall be increased in instances where overlooking or overshadowing occurs.*

In addition to the above, Section 14.6.6.3 of the current plan states that, in certain instances, depending on orientation and location in built up areas, reduced separation distances may be acceptable. We note that the proposed development has been designed in accordance with the above standards, and in most instances complies with the required separation distances. There are however some instances where the separation distances falls slight short of this requirement, however given the orientation of the blocks and the fenestration arrangements, this reduced distance is considered acceptable and other design measures have been implemented to ensure overlooking is mitigated.

A separation distance of at least 2.3m should be provided between the side walls of each house, pair of semi-detached houses or each terrace houses in order to allow for adequate maintenance and access. In this regard, the following Objective in the development plan is relevant.

Objective DMSO26 *Ensure a separation distance of at least 2.3 metres is provided between the side walls of detached, semi-detached and end of terrace units. (Note: This separation distance may be reduced on a case-by-case basis in relation to infill and brownfield development which provides for the regeneration of under-utilised lands and subject to the overall quality of the design and the schemes contribution to the streetscape. A statement demonstrating design mitigation and maintenance arrangements shall be submitted in such cases).*

The proposed development has been designed to comply with the above objective in the development plan.

Daylight, Sunlight and Overshadowing

As noted in the development plan, high levels of daylight and sunlight provide for good levels of amenity for residents. The internal layout of residential units should be designed to maximise use of natural daylight and sunlight. The following Objective is relevant:

Objective DMSO22 *Require Daylight and Sunlight analysis for all proposed developments of 50+ units or as required by the Planning Authority, depending on the context of the site and neighbouring property as well as the design of the development.*

It is considered that the position of the proposed development complies with Objective DMS022 in that great care has been taken to maximise the number of dwellings oriented for optimal solar gain. The layout of the development has been guided by the need to minimise any potential negative effects on residential properties. The proposed development would therefore have no adverse impact with regard to daylight, sunlight and overshadowing. A Daylight and Sunlight Analysis Report, created by 3D Design Bureau accompanies the application.

Childcare Facilities

The Fingal Development Plan 2023-2029 states that new residential development must include the provision of childcare facilities within a proposed development. In this regard, the following Objective is relevant:

Objective CIOSO28 *Require the provision of appropriate childcare facilities as an essential part of new residential and mixed-use developments in accordance with the provisions of the Childcare Facilities Guidelines for Planning Authorities 2001 or any superseding Guidelines, or as required by the Planning Authority. Such facilities should be provided in a timely manner and be an integral part of the development proposal.*

As mentioned in Section 6.1.12 of this report, The Childcare Facility Guidelines for Planning Authorities, 2001, require the provision of at least one childcare facility for new housing areas at a rate of one childcare facility for each 75 no. dwellings would be appropriate. The threshold for provision should be established having regard to the existing geographical distribution of childcare facilities and the emerging demographic profile of areas. The guidelines assume that:

'50% approximately of the housing area will require childcare then in a new housing area of 75 dwellings, approximately 35 will need childcare. One facility providing a minimum of 20 childcare places is therefore considered to be a reasonable starting point on this assumption. Other assumptions may lead to an increase or decrease in this requirement.'

The minimum standards recommended within the guidelines are for the provision of 2.32sq.m minimum floor space per child (exclusive of kitchen, bathroom and hall, furniture or permanent fixtures). Furthermore, the guidelines refer to the Explanatory Guide to the Child Care (Pre-School Services) Regulations (1996), which recommends the following standards:

Age of Child	Floor area per child
0 – 1	3.7sq.m
1 – 2	2.8sq.m
2 – 6	2.32sq.m

Table 3.13 Recommended floor area per child

3 no. childcare facilities (with cumulative floor area of 1,252.6sq.m) will be provided within the proposed development in accordance with the above policies.

We also note the presence of approximately 12 no. childcare facilities within proximity of the subject lands. The following facilities are within a ten-minute walk of the application site:

- *Fun Times – 1 Naul Road, Balbriggan;*
- *Balbriggan Community Childcare – Tankardville House, Brecon Close, balbriggan;*
- *St. Ann's Montessori Pre School – 35 Dublin Street, Balbriggan;*
- *Cocoon Childcare – Cardy Rock Road, Balbriggan;*
- *Bremore Castle Montessori – 747 Bremore Castle, Balbriggan;*
- *The Children's Village – Children's Village, Balbriggan;*
- *Five Little Fingers – 7 Chapel Avenue, Balbriggan;*
- *Snowdrops Creche – 29 Clonuske park, Balbriggan;*
- *Sunbeams Preschool – 6 Fulham Street, Balbriggan;*

- *Home From Home Creche – Hampton Lane, Balbriggan;*
- *Kidoodles – 1 Mount Rochfort Avenue, balbriggan;*
- *Little People’s Academy – Dublin Road, balbriggan; and*
- *The Children’s Village – Chieftains Way, Balbriggan.*
-

A Social Infrastructure Audit Report, created by Hughes Planning and Development Consultants, accompanies this request and it is contended that the proposed 3 no. creche facilities, in addition to the existing facilities already operational in the area, will cater for the needs of future residents of the scheme. Please refer to the Social Infrastructure Audit Report for further clarity.

Children’s Play Areas

The Development Plan requires children’s play areas to be provided as an integral part of the design of new residential and mixed-use developments, to be addressed as part of a landscape plan. The minimum requirements for the provision of play facilities are as follows:

Objective CIOSO44 *Facilitate the provision of appropriately scaled children’s playground facilities within new and existing residential development in line with the Council’s Play Policy.*

The proposed play areas comply with the criteria listed above. Please Incidental open space has been designed out of the scheme. Please refer to the Landscape Plan and the Design Statement prepared by IS Design Landscape Architects for further details.

Social Housing

The Fingal Development Plan 2023-2029 states that, pursuant to Part V of the Planning and Development Act, 2000 (as amended) there is a social housing requirement of 20%, which will be applied to planning permissions for housing on lands zoned for residential use and mixed-use development.

The Applicant will comply with the requirements of Section 96 (Part V) in the Planning and Development Act 2000 (as amended). Further detail on the number of units to be supplied is outlined in Section 8.0 of the accompanying Statement of Consistency and Planning Report as prepared by Hughes Planning and Development Consultants.

Balbriggan Local Area Plan

The Balbriggan Local Area Plan was adopted in 2005 on lands which encompassed the subject site. This Local Area Plan proposed c. 2,500 dwelling units. The provision of the 2005 Balbriggan Local Area Plan (now lapsed) has been considered in the preparation of this application. The proposed development maintains the broad form, layout and residential density as set out in the Balbriggan LAP.

3.5 Planning History of the Site

This section provides an overview of the planning history for the subject landholding and immediately adjacent lands. As previously indicated, the submission lands already have the benefit of planning permission for the construction of in excess of 500 no. residential units.

3.5.1 Planning History of the Site and Surrounding Area

A review of the Fingal County Council planning register found the following planning permission relating to the subject lands. The details of this applications are outlined below and overleaf:

North-West Balbriggan, Co. Dublin**F06A/0784**

Planning permission granted on 5th September 2006 for development comprising the construction of 75 residential units and a crèche on two separate sites within the same overall development. Area 1 will accommodate 75 residential in a mix of apartments, duplexes, semi-detached and terraced dwellings 126 no. car parking spaces, site development and landscape works including public open space and provision of a bus lay-by. Area 2 will accommodate a single storey crèche facility (c. 130m²); site development and landscape works, including the provision 11 no. car parking spaces; alterations to work previously permitted under Reg. Ref. F04A/1434 including repositioning of pedestrian crossing and realignment of a pedestrian walkway on the landscaped area. Vehicular access to serve development in both areas 1 and 2 is proposed via permitted internal road system granted under Reg. Ref. F00A/1464, Reg. Ref. F03A/1681, Reg. Ref. F04A/0806 and Reg. Ref. F04A/1434, which in turn connect to Hamlet Lane and the Balbriggan Inner Relief Road respectively. The cumulative site area is c. 1.855 hectares on lands bounded generally by Flemington Lane to the north of the proposed C-ring Relief Road to the west and development permitted under Planning Permission Reg. Ref. F04A/1434 to the east of area 1 and surrounding area 2.



Figure 3.7 Extract from the site layout plan as submitted to Fingal County Council under Reg. Ref. F06A/0784

Reg. Ref. F08A/1329 Permission granted on 14th September 2009 for a duration of 10-years to construct, in summary, a development incorporating 532 no. dwellings, the Balbriggan C-Ring Road and boulevard, a major regional Class 1 public park and an urban square/civic space. The approved development ranges in height between 2, 3 and 4 storeys and will comprise: 281 no. houses and 251 no. apartments.



Figure 3.8 Extract from the site layout plan as approved by Fingal County Council and An Bord Pleanála under **Reg. Ref. F08A/1329** and **ABP Ref. PL06F.235048**

An Extension of Duration Application was submitted and approved by Fingal County Council under **Reg. Ref. F08A/1329/E1** in respect of the above development, which extends the life of the permission up to and including the **23rd of February 2025**. We note the following positive commentary as contained within the Chief Executives Order, in respect of the development approved under **Reg. Ref. F08A/1329**:

*'The proposed development represents a **high quality residential development for this area of north-west Balbriggan**. The proposal incorporates a series of distinct residential character areas which provide **diversity and interest to large housing proposal**. The development also provides a distinct 'Urban square' – this will serve as an urban quarter providing facilities for all of North West Balbriggan.'*

'It is considered that the proposed development accords with the relevant planning policy framework provided by the Balbriggan Local Area Plan (2005), the Fingal Development Plan 2005-2022 and the National Planning Guidelines. The development also fully complies with the Design Standards for new apartments of the DOEHLG.'

It is also noted within the Chief Executive's Order also concluded that *'the proposed development is generally acceptable and will provide an attractive new residential quarter for Balbriggan'*.

The above application was initially granted permission by Fingal County Council on 14th September subject to 42 no. conditions. The decision of the council was subsequently subject to a first-party appeal to An Bord Pleanála (**ABP Ref. PL06F.235048**) against Condition No's. 5(i), (ii), (vi), (xi); 10; 12; 15(a), (h), (i), Wetlands on Open Space Areas, Public Lighting, Street Signage, Taking in Charge of Open Spaces, Playground Specs; 17 – Foul Sewer (ii), (iii); 17 – Surface Water (ii); 17 Water Supply (ix); 20;

28 and 33 attached to the grant of planning permission issued by Fingal County Council on Reg. Ref. F08A/1329. It is noted that the Board upheld the decision of the council and granted permission for the proposed development on **3rd March 2010**, including a number of amendments made to the conditions initially attached in the Planning Authorities grant of permission.

We note that the permission for residential development at the subject site has been looked on favourably by both An Bord Pleanála and the Council and it is submitted that the sustainable development of the site to provide for a quality, medium to high density residential scheme makes appropriate use of underutilised lands, facilitating the growing need for housing throughout Dublin. It is clear from the above approvals that the principle of residential development on the submission lands is established.

Reg. Ref. F17A/0372 Planning permission granted by Fingal County Council on 23rd August 2017 for alterations to previously approved residential development (Reg. Ref. F07A/1249/An Bord Pleanála Ref. PL06.231457). The proposed development consists of the omission of the following sections of the previously approved residential development: 'Flemington Village' (superseded by Reg. Ref. F13A/0240 and F15A/0437); 'Naul Park' (superseded by Reg. Ref. F15A/0550); 'River Court' and 'Hampton Court' (superseded by F15A/0242, approval for development of St George's National School and Coláiste Ghlór na Mara Secondary School). The omission of the above sectors of development results in an altered permission comprising only Phase 1 open space to the north-west (as amended by Reg. Ref. F15A/0550), 'Boulevard Road, and 'Ladywell Avenue' sector of development located in the southwest corner of the site, which comprises a total of 233 no. dwelling units, consisting of 89 no. houses (11 no. two-bedroom two-storey houses; 19 no. three-bedroom two-storey houses; 14 no. three-bedroom three storey houses; 25 no. four-bedroom two-storey houses; 20 no. four-bedroom three-storey houses); and 144 no. apartments in three and four storey blocks (40 no. two-bedroom duplex apartments; 60 no. two-bedroom apartments; and 44 no. three-bedroom duplex apartments); crèche; 398 no. car parking spaces (89 no. undercroft and 309 no. surface level); and 144 no. bicycle spaces (one for each apartment). All ground floor apartments have private terraces; all upper level apartments have private balconies and all houses have private rear gardens; landscaped public open space including Public Park (as amended under Reg. Ref.F15A/0550); piped and other services, roads and footpaths, refuse storage, ESB substations, landscaping and boundary treatments and all associated site development works. Works also include construction of the partially completed 'Boulevard' Road running from the intersection with the proposed C Ring Road south to Naul Road.

An extract from the site layout plan as submitted to Fingal County Council as part of this application is included overleaf:

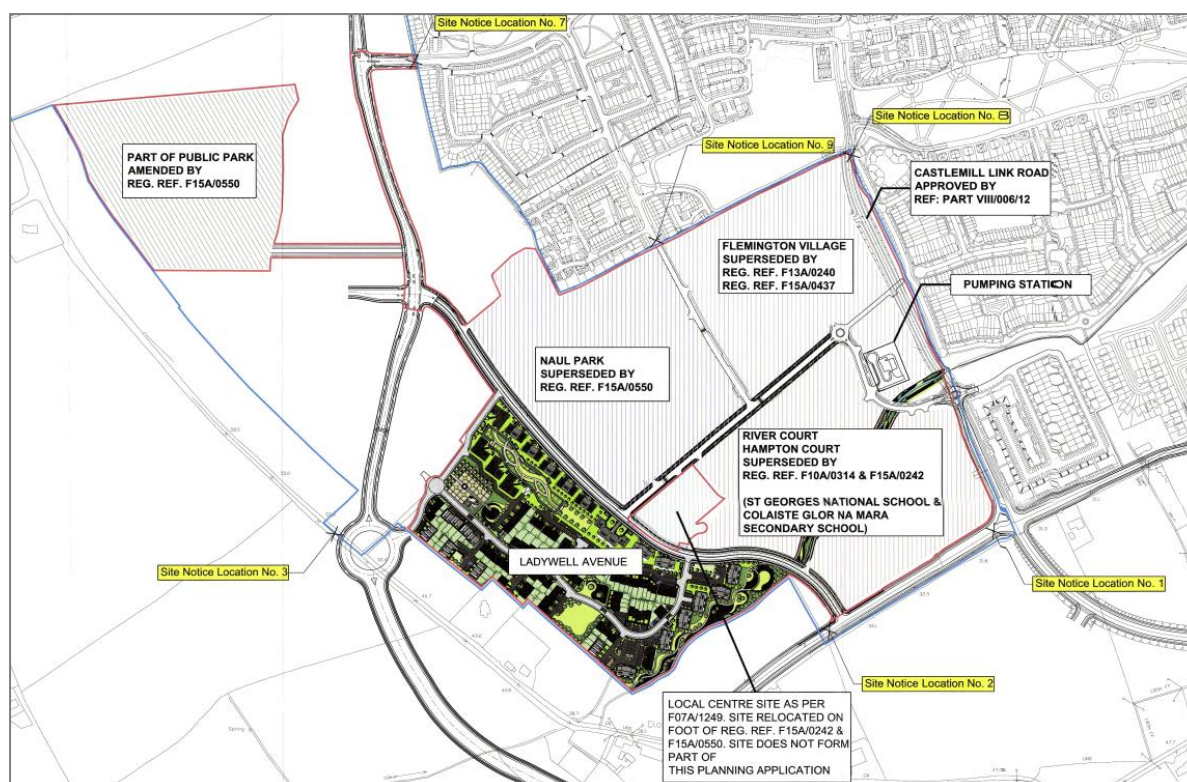


Figure 3.9 Site layout plan as submitted to Fingal County Council under Reg. Ref. F17A/0372.

This application was approved by Fingal County Council and subsequently refused by the Board under ref. PL06.231457 included a number of land parcels, and not just the Naul Roads land.

3.6 Planning History of the Adjoining Land

The following permissions have been previously permitted for lands which directly connect the subject development and form part of the overall northwest Balbriggan landbank.

Reg. Ref. F22A/0526 Planning permission was granted on 4th May 2023 for alterations to previously approved planning application Reg. Ref. F15A/0550 which permitted 82 no. dwellings (20no. three bed, 2-storey semi-detached or option of four bed, 2.5 storey semi-detached dwellings; 17 no. three bed, 2-storey semi-detached dwellings; 13 no. three bed, 2-storey end of terrace dwellings; 14 no. three bed, 2-storey mid terrace dwellings; 32 no. two bed, 2-storey mid terrace dwellings; and 2 no. three bed, 2-storey detached dwellings) in the western section. The proposed alterations consisted of the construction of 98 no. dwellings with on curtilage car parking and an increase in the size of the creche. Lands off the Naul Road, Balbriggan, Co Dublin, Located North-West of Coláiste Ghlór na Mara, school site, South-West of Martello Housing, Estate, and West of the, Taylor Hill Housing Estate.



Figure 3.10 Extract from the Site Layout Plan as submitted at Additional Information under Reg. Ref. F22A/0526

In granting permission for the above application, Fingal County Council noted the following:

'Having regard to the nature and scale of the proposed development as clarified by way of Additional Information it is considered that the proposed development would not detract from the amenity of the surrounding area and would be in accordance with relevant policy and the provisions of the Fingal Development Plan 2017-2023. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.'

Reg. Ref. F19A/0001 Planning permission was granted for alterations to the western section of previously approved planning application Reg. Ref. F15A/0550 which permitted 82 no. dwellings in this western section. The proposed alterations consist of : (i) Construction of 98 no. dwellings (20no. three bed, 2-storey semi-detached or option of four bed, 2.5 storey semi-detached dwellings; 17 no. three bed, 2-storey semi-detached dwellings; 13 no. three bed, 2-storey end of terrace dwellings; 14 no. three bed, 2-storey mid terrace dwellings; 32 no. two bed, 2-storey mid terrace dwellings; and 2 no. three bed, 2-storey detached dwellings) with on curtilage car parking. (ii) An increase in the size of the 1 no. crèche facility proposed on the site from 345sq.m to 356sq.m; (iii) Landscaping, boundary treatments, street lighting, SuDS drainage, piped and other services and ancillary site development works necessary to facilitate the development. No alterations are proposed to the Class 1 public park and associated works located to the West of Bremore Pastures and Hasting Lawn, South of Flemington Lane, approved under Reg. Ref. F15A/0550.



Figure 3.11 Extract from the site layout plan as submitted to Fingal County Council under Reg. Ref. F19A/0001.

This application was submitted on 4th January 2019 and was approved on 1st April 2019 by Fingal County Council. In approving permission for the above development, Fingal County Council concluded that:

'the proposed development by virtue of its scale and design would not unduly impact on the amenity of neighbouring property and does not detract unduly from the amenity of the surrounding area. The proposed development accords with the applicable objectives of the Fingal Development Plan 2017-2023. The proposed development is therefore considered to be in accordance with the proper planning and sustainable development of the area.'

Reg. Ref. F15A/0550 Planning permission granted by Fingal County Council on 3rd October 2016 for the construction of 148 no. dwellings comprising of 115 no. three bed units and 33 no. four bed units with on curtilage car parking, private open space, internal roads, footpaths, cycle tracks, public open space, children's play area, 1 no. crèche facility. The public car park will be linked to the proposed residential development via distributor road previously permitted under Reg. Ref. F08A/1329. Permission is also sought to amend the location within Class 1 public park of approved Class 1 public open space arrangements for previously permitted developments: Reg. Ref. F04A/0745, Reg. Ref. F05A/0323, Reg. Ref. F08A/1329, Reg. Ref. F11A/0442, Reg. Ref. F13A/0240 and Reg. Ref. F14A/0381.

The subject lands in this application formed part of a previously approved larger residential development under Reg. Ref. F07A/1249 for c. 1,000 units. Reg. Ref. F15A/0550 was approved permission for a residential development comprising 148 no. dwellings and a childcare facility. An area of Class 2 public open space was approved in the centre of the proposed development and other areas of open space were dispersed throughout the development. Class 1 open space is provided in the public park to the north-west of the site.



Figure 3.12 Extract from the site layout plan as submitted to Fingal County Council under Reg. Ref. F15A/0550.

Reg. Ref. F07A/1249 A 10-year planning permission granted by Fingal County Council on 20th April 2009 (Appeal Ref. PL06F.231457) for a total of 998 no. residential units in five distinct sectors known as “Flemington Village”, “Naul Park”, “River Court”, “Hampton Court” and “Ladywell Avenue”. The permission also provided internal roads including the ‘Boulevard’, open space including part of a Public Park, 5 no. crèches and a pumping station.

- Flemington Village was superseded by a revised housing development under Reg. Ref. F13A/0240 and F15A/0437, also subject to the construction of the Castlemill Link Road (PART VIII/006/12);
- Naul Park was superseded by a revised housing development under Reg. Ref. F15A/0550;
- Hampton Court was superseded by Reg. Ref. F10A/0314, which related to the permanent use of the land for St. George’s National School. Land has also been subsequently rezoned from Residential to Community Infrastructure; and
- River Court were superseded by Reg. Ref. F15A/0242, which related to the development of Colaiste Ghlór na Mara Secondary School. Land has also been subsequently rezoned from Residential to Community Infrastructure.

The original Reg. Ref. F07A/1249 permission consisted of 998 no. residential units, 5 no. creche units, public open space, car parking, internal roads and footpaths, new vehicular entrances, ESB substations, landscaping and all associated site development works. The permission was superseded by the following permissions:

- **Reg. Ref. F13A/0240** granted permission for 99 no. residential dwellings;
- **Reg. Ref. F14A/0198** granted permission for a single storey temporary building at Colaiste Ghlór na Mara;
- **Reg. Ref. F15A/0242** granted a new school building at Colaiste Ghlór na Mara; and

- **Reg. Ref. F15A/0437** granted permission for Alterations to previously approved development (**Reg. Ref. F13A/0240**) which consists of revised house types and layout and an increase in the number of dwellings from 99 no. to 131 no.

The principal remaining function of this permission is to authorise the construction of the distributor road being Boulevard Road. This application was approved permission to redesign a central portion of the lands (the Naul Park character area) to provide 148 no. residential units and 1 no. creche facility. The alterations are to the eastern section of the subject site under Reg. Ref. F15A/0550, where 82 no. dwellings were previously approved. 98 no. dwellings are now proposed on the eastern section of the site.

North of Naul Road & North West of Hampton Gardens, Balbriggan, Co. Dublin

Reg. Ref. F08A/1038 Permission granted on 19th February 2009 for a roundabout on the section of the main distributor road north of the Naul Road. The roundabout was to be located north-west of the existing Hampton Gardens residential estate.

This permission has been superseded by **Reg. Ref. F13A/0240** which permitted 99 no. residential dwellings and Reg. Ref. F15A/0437. Both Reg. Ref. F13A/0240 and F15A/0437 take the approved Castle Mills Link Road into account, which was not proposed by Fingal County Council at the time of the 2008 roundabout application.

North of Naul Road, South of Flemington Lane, East of Clonard-Bridgefoot Road, West of Moylaraigh, Balbriggan, Co. Dublin

Reg. Ref. F10A/0263 A 10-year planning permission granted on 1st February 2011 for alterations to previously approved Reg. Ref. F07A/1249. The proposed alterations relate solely to all 93 no. House Type 2's within the approved development of 998 no dwellings, as follows: revised elevation treatment; internal alterations; and addition of attic accommodation to provide a fifth bedroom.

This permission is largely irrelevant as it has been superseded by **Reg. Ref. F13A/0240**

Reg. Ref. F13A/0240 10-year planning permission granted on 23rd June 2014 for 99 no. two storey detached and semi-detached residential dwellings.

This site is currently being developed by Glenveagh Homes Ltd. The proposed development aims to incorporate with the development in terms of style and layout in order to achieve an overall sense of place. The building heights and design of the proposed dwellings are consistent with that of the adjoining residential development.

Reg. Ref. F15A/0437 Permission granted on 1st February 2016 for alterations to the development approved under Reg. Ref. F13A/0240, allowing an increase in the number of houses from 99 no. to 129 no.

Reg. Ref. F17A/0374 Planning permission granted on 25th September 2017 for alterations to previously approved Reg. Ref. F15A/0437, increasing the approved 129 no. dwellings to 130 no. dwellings.

Reg. Ref. F17A/0690 Planning permission granted on 14th February 2018 for alterations to previously approved Reg. Ref. F17A/0374, increasing the approved 130 no. dwellings to 135 no. dwellings.

Upon review of the above permissions, it is clear that development in the area surrounding the site has been ongoing for a number of years. The proposed development subject to this application at ands off Flemington Lane, seeks to provide for a high-quality residential development on lands, whereby the principle of residential development has already been established through its planning history. Further the development of the subject lands will see the delivery of key infrastructure and amenity's, including the Ring Road and a Class 1 Public Park, which will not only serve the proposed development, but will further benefit the wider surrounding environs.

3.7 Conclusion

The proposed development is consistent with national, regional and local planning policies for the following reasons:

- The subject proposal involves the redevelopment of a large serviced and well-connected underutilised site in an existing built-up area which is identified for 'residential' in the Fingal County Development Plan 2023-2029.
- The 'sustainable transport' focus adopted in the context of the proposed development's design is consistent with national planning policy which encourages reduced car parking provision in central areas such as this which are well served by public transport.
- The proposed development has been designed having regard to the Fingal County Development Plan 2023-2029 and incorporates a variety of new open spaces; improving legibility throughout the area through the introduction of a new block structure and the creation of new streets and introducing a series of buildings, which adopt varying heights and feature a rich palette of materials and finishes, and create visual interest.
- The proposed development is consistent with the requirements outlined for apartments in the Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (2020), and provides numerous amenity spaces (both internal and external) across the site to serve residents, consistent with the requirements specific to Build-to-Rent developments.
- The proposed development will result in a highly accessible and sustainable modern high-quality urban residential neighbourhood, as sought by the Fingal County Development Plan 2023-2029, due to the design/quality of the development proposed as well as the employment opportunities existing in the surrounding area and the sites proximity to multiple public transport services and the nearby Balbriggan Town Centre.

Further to the above, the proposed development has had regard to the emerging character of Balbriggan and will sit comfortably in this emerging area. As previously mentioned, a detailed assessment of the proposed development against the relevant policies and objectives is provided in the Statement of Consistency and Planning Report, prepared by Hughes Planning and Development Consultants, which accompanies the planning application.

4.0 POPULATION AND HEALTH

4.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants. More specifically, this chapter of the EIAR was prepared jointly by Mrs. Muireann Coughlan, Associate and Ms. Danielle O' Leary, Senior Planner with Hughes Planning and Development Consultants.

Mrs. Muireann Coughlan graduated with honours from University College Cork with a Masters in Planning and Sustainable Development (MPLAN) in 2010, having previously completed a joint honours Bachelor of Arts degree in Geography and Sociology. Muireann has also completed a Post Graduate Certificate in Design Management. Muireann is currently an Associate with Hughes Planning and Development Consultants. Prior to this, she worked in local government and private consultancies in both Ireland and the United Kingdom. Muireann has 13 years of experience in the field of planning, which has included providing consultancy services in respect of several major residentially-led projects. Muireann is a Full Member of the Royal Town Planning Institute (RTPI) and Corporate Member of the Irish Planning Institute (IPI).

Ms. Danielle O'Leary of Hughes Planning and Development Consultants, graduated with honours from University College Cork (UCC) with a Masters in Planning and Sustainable Development(MPLAN) in 2018, having previously completed a Bachelor of Science Degree in Earth and Environmental Systems Sciences from University College Cork (UCC) in 2016. Danielle has over 5years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major residentially-led projects, including EIA. Danielle is currently a Senior Planner in the practice of Hughes Planning and Development Consultants and is a member of the Irish Planning Institute (IPI).

According to European Commission's Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (2017), 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.

The Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft (2017) advise that "in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc."

This section of the EIAR assesses the impact of the proposed development on the human environment in the general area of the subject site at Balbriggan, Co. Dublin, in terms of population levels; employment and economic activity; land use and settlement patterns; housing; community infrastructure and social facilities; health and safety; and risk of major accidents and disasters.

This chapter addresses potential impacts of the proposed mixed-use development at Balbriggan, Co. Dublin, on population and human health. Potential impacts of this proposal on population and human health arising from traffic and transportation, air quality and climate, noise and vibration, visual amenity and material assets: utilities and the risk of major accidents and/or disasters. are dealt with in the specific chapters in this EIAR dedicated to those topics.

4.2 Methodology

At the time of writing there is no guidance from the EU Commission on the EIA Directive to indicate how the new term 'Human Health' should be addressed. Therefore, this chapter of the EIAR document has been prepared with reference to recent national publications which provide guidance on the 2014 EIA Directive including Draft Guidelines on the information to be contained in environmental impact assessment reports, published by the EPA in August 2017 and Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018).

To establish the existing receiving environment / baseline, several site visits were undertaken to appraise the location and likely and significant potential impact upon human receptors. Further to this, a desk top study of a number of relevant policy documents and data sources was carried out, including: Central Statistics Office Census data; the ESRI Quarterly Economic Commentary; the RSES for the Eastern and Midlands Regional Assembly; and the Fingal Development Plan 2023-2027.

This chapter of the EIAR document focuses primarily on the potential impacts on Population, which includes Human Beings as required under the Schedule 6 of the Regulations, 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.

4.3 Population

4.3.1 Receiving Environment (Baseline Scenario)

On the ground, population to the north and west of the site is minimal due to the rural nature of the landscape. To the east, residential development is prominent as the town of Balbriggan continues to grow in population and size.

The subject site at Clonard Cross is located within the Electoral Division of Balbriggan Rural (Electoral Division No. 04002), which, according to the Census had a population of 19,167 no. persons in 2022 up from 16,495 no. persons in 2016. This represents a population percentage change of 16.2% or an actual population increase of 2,672 no. from the 2016 Census figures.



Figure 4.1 Aerial image of the subject site outlined in red, with the settlement of Balbriggan located to the east.

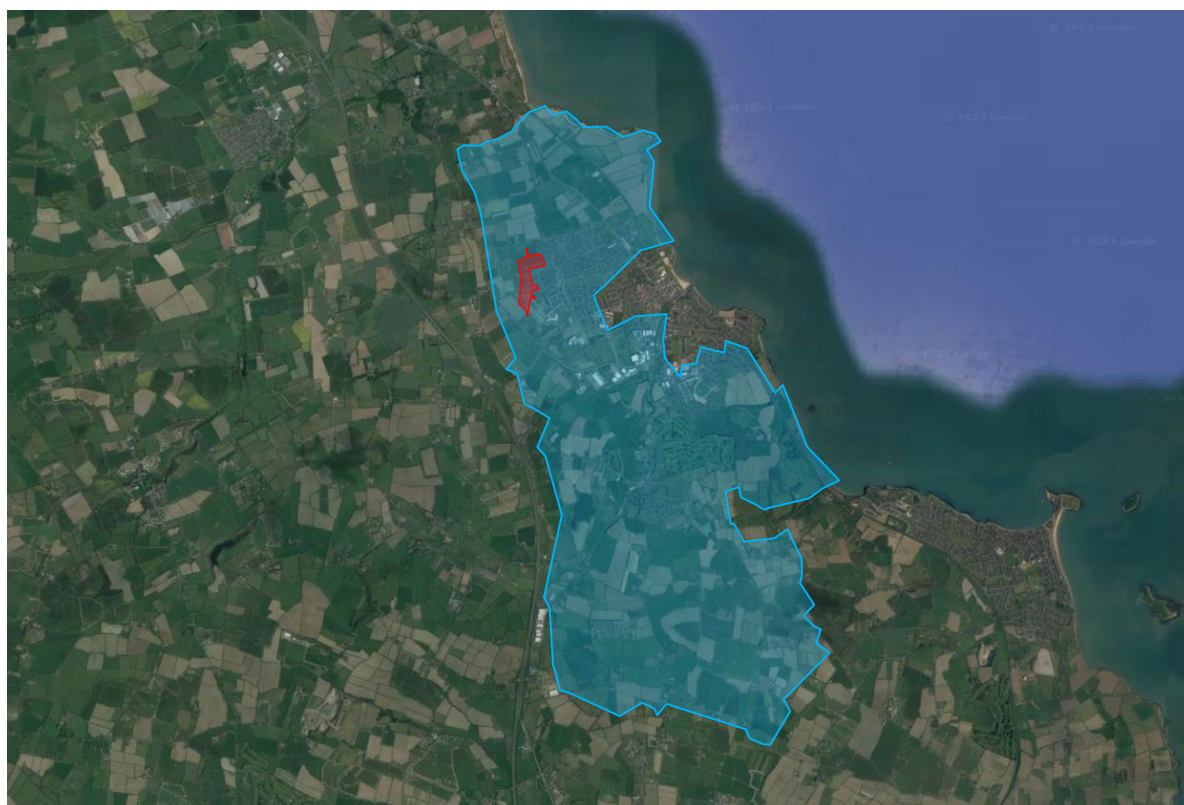


Figure 4.2 Location of subject site in context of the Electoral Division of Balbriggan Rural, (outlined in blue)

Population characteristics for the broader Balbriggan area have been obtained from the Central Statistics Office Census of Population, 2022. These figures are the sum of the Electoral Division of Balbriggan Rural (No. 04002) and the Electoral Division of Balbriggan Urban (No. 04003). From the census figures it can be gathered that the population in the vicinity of the proposed development has increased over recent intercensal periods. Within the catchment area the population growth levels have been very disparate, however, Table 4.1 shows the population growth within the County of Dublin, the settlement of Balbriggan and Ireland as a whole.

Settlement/ Province	2006	2011	2016	2022	% Change		
					2006-11	2011-16	2016-22
Ireland - State	4,239,848	4,588,252	4,761,865	5,123,536	8.2	3.8	7.6
Co. Dublin	1,187,176	1,273,069	1,347,359	1,450,701	7.2	5.8	7.7
Balbriggan Rural (No. 04002) and Urban (No. 04003)	15,559	19,960	24,611	27,292	28.3	23.3	10.9

Table 4.1 Population Trends 2006-2022

The above table identifies the significant population growth that the settlement of Balbriggan has experienced in comparison to Ireland and the wider County of Dublin. The CSO data outlines that Ireland has seen a 20.8% increase in population from 2006 to 2022, whilst during the same period, Balbriggan has experienced a 75.4% growth.

The population within the settlement of Balbriggan has increased and is projected to continue to increase due to its proximity to Dublin City Centre, the M1 motorway and Balbriggan Train Station connecting Balbriggan to Dublin City Centre and the M1 motorway connecting Dublin to Belfast.

4.3.2 Potential Impact of the Proposed Development

'Do Nothing' Scenario

Were the development to not proceed, the present agricultural use of the subject site would remain. This would be an underutilisation of the site from a sustainable planning and development perspective, particularly considering the location of the lands adjacent to a town and within an area which is identified for residential use. As such, a 'do nothing' scenario would mean that this objective of the Development Plan would not be met, and some 564 no. households would remain uncatered for.

Were the lands to remain undeveloped, the status of the environmental receptors described throughout this EIAR document would be likely to remain unchanged. The potential for any likely and significant adverse environmental impacts arising from both the construction and the operational phase of the proposed development would not arise. In terms of likely evolution without implementation of the project as regards natural changes from the baseline scenario, it is considered there would be limited change from the baseline scenario in relation to population (human beings) and human health. However, similarly the potential for any likely and significant positive environmental impacts arising from both the construction and operational phases of the proposed development would not arise.

Failure to deliver the proposed residential units would result in existing housing need and demand remaining unmet. The new pedestrian and cycle links, childcare facilities and public open spaces to be provided in the development and serving the wider area would also not be provided.

As such, the impact of the development not proceeding on population profile and trends in the area would be negative.

Construction Phase

The construction phase of the proposed development should not have any direct impact on the population of the area as no additional persons will be housed on site.

The construction phase will generate a greater number of people within the area on a temporary basis, as the construction will see construction workers and delivery drivers arriving and leaving the site at the start and end of each day. However, the implications of this are not considered to have significant effects to the surrounding community due to the location of the site on the outskirts of the built-up area of Balbriggan.

Operational Phase

The operational phase of the proposed development will have a direct impact on the population of the area and the subject lands. With a total of 564 no. residential units proposed to be built, the anticipated increase in population for the site can be expected to be c. 1,512 based on the average household size. This is based on average household numbers for one, two, three and four-bedroom residential units. The impacts of an increase in the population within the site will be gradual during the completion of the development. The population of the development will therefore be significant and positive particularly in the context of current housing demand and taking account of the subject site's location in close proximity to public transport links such as the proposed bus connects routes and access to areas of employment.

The new community resulting on the subject site is considered significant and positive, particularly in the context of current housing demand.

4.4 Employment and Economic Activity

4.4.1 Receiving Environment (Baseline Scenario)

The CSO's quarterly Labour Force Survey (Q4 for 2022) indicated an annual increase of 2.7% (68,600) in employment at national level, bringing total employment to 2,574,500. This compares with an annual increase of 10.1% or +229,100 in the year to Q4 2021, and a decrease of -2.3% or 55,000 in the year to Q4 2020 (as a result of the Covid 19 pandemic).

Unemployment steadily declined by -12.1% (15,400) for the 2022 Q4, bring the total unemployment number to 112,000 people.

The total number of persons in the labour force for 2022 Q4 was 2,574,500 which represents an increase of 2.7% (68,600) from 2,506,000 in Q4 2021. The number of persons aged 15-89 years in employment increased by 68,600 or 2.7% to 2,574,500 persons in the 12 months to Q4 2022. This is the highest number of persons employed in the State since the series began in 1998. Many of the economic sectors saw an increase in employment numbers. The largest of these was the administration and support service activities sector which increased by 15.2%, followed by Transportation & Storage sector which increased by 7.1%.

The above sources demonstrate that the national economy and employment levels are expected to improve in 2023 and beyond, with the Government faced with the challenge of sustaining economic activity and competitiveness during a period of likely full employment. This in turn results in increased demand for residential dwellings particularly within the Dublin region. Further to this, a number of large corporations have premises within close proximity to the subject site. These premises include Techrete Ireland Limited (an Irish and UK based cladding manufacturer) located in the Stephenstown Industrial Park, approximately 1.5km to the south-east of the subject site.

4.4.2 Potential Impact of the Proposed Development

'Do Nothing' Scenario

Were the current land use to continue on the subject site, the current levels of employment required to maintain this activity would remain steady and the subsequent impact on employment would be neutral.

In a 'do nothing' scenario, the economic investment arising from a large-scale construction project would not be availed of, and this strategically located, zoned site would remain in an agricultural use. This would represent a lost opportunity in economic terms.

Construction Phase

The construction phase of the proposed development will provide a positive improvement to the economy and employment prospects within Balbriggan and the surrounding area more broadly, particularly within the wider construction sector for a 36 month period (estimated construction period). The construction of a mixed-use development, including 564 no. residential units, will provide a substantial number of construction-related jobs for the duration of the development. Whilst it is difficult to place a total number on the employment for the proposed development, the extent of work and varying construction-related industries required for the residential development will provide a variety of employment phased throughout the development including up to 80 works during construction.

The construction phase will also have secondary and indirect 'spin-off' impacts on ancillary support services in the 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 beneficial impacts on economic activity 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.

Whilst there will be some negative impacts felt to the wider community during the construction phase by way of noise, dust and traffic, this is unlikely to be significant. These issues and appropriate mitigation

measures are addressed in Chapters 8, 9 and 12 of the EIAR, in the Traffic and Transportation Assessment, Construction and Environmental Management Plan and the Construction Waste Management Plan which accompany the application. The Traffic and Transportation Assessment recommends that a Construction Traffic Management Plan be implemented for the site which will minimise disruption to the surrounding road network.

Operational Phase

The operational phase of the proposed development will result in the provision of 564 no. dwelling units, consisting of 378 no. houses; (127 no. two bedroom houses; 237 no. three- bedroom houses and 14 no. four-bedroom houses), 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 102 no. apartments (35 no. one bedroom apartments and 67 no. two bedroom apartments), 3 no. childcare facilities, 9 no. commercial units and 6 no. communal units to serve residents of the development.

This increase in population in the area will enhance local spending power and will assist with the delivery of a critical mass of population which will support a wide range of additional local businesses, services, transport infrastructure and employment opportunities. This will play a role in the future growth of the area and the improvement of local amenities and infrastructure.

4.5 Land Use and Settlement Patterns

4.5.1 Receiving Environment (Baseline Scenario)

The subject site is a greenfield site that has been earmarked for future residential development. The subject site is located on the periphery of similar residential developments on the western outskirts of Balbriggan.

Similar developments have been granted permission in the surrounding area in recent years, paving the way for a high-density suburb with strong transport links to Dublin.

The lands surrounding the subject site to the north and south are predominantly greenfield in nature and under agricultural use. The sites western boundary is flanked by the M1 motorway, with the land further west of this also greenfield in nature and under agricultural use. To the east of the subject site are established residential developments.

Whilst the subject site lands have predominantly operated as agricultural land, present zoning reflects changing land use patterns for this area, west of the town of Balbriggan. The zoning of the land provides an opportunity for Balbriggan to increase its population and employment opportunities.

As Figure 4.3 below outlines, the subject site is zoned both RA - Residential Area. The objective for RA - Residential Area zoned land is '*Provide for new residential communities subject to the provision of the necessary social and physical infrastructure*'. This is reflective of the subject application which proposes residential development.

The former greenfield site and surrounding land uses are, similar to surrounding land, becoming more connected to the Balbriggan township through residential and commercial development and the public transport routes servicing the town.



Figure 4.3 Extract from Fingal Land Use Zoning Objectives Map, contained within the Fingal County Development Plan 2023-2029, with the development site (red outline) situated within lands zoned 'RA - Residential Area'

Balbriggan has been identified in the Fingal County Development Plan 2023-2029 as a 'Core Area - Self Sustaining Towns', and as such, specific policies and objectives relating to the growth of population and economic development of the town have been identified.

The proposed development is in keeping with the policies and objectives for the township of Balbriggan and is consistent with the identified land uses earmarked for the site, and appropriately responds to the existing settlement pattern and residential densities of nearby developments, including recently approved developments.

4.5.2 Potential Impact of the Proposed Development

'Do Nothing' Scenario

Were the development not to proceed, the present agricultural use of the subject site would remain, as discussed in Section 4.3.2 above, a do-nothing scenario would mean that the objectives of the Development Plan would not be met, and some 564 no. households would remain uncatered for.

Construction Phase

The construction phase of the development will see site works comprising site clearing, excavation, infrastructure works in preparing the road and drainage infrastructure and construction works. It has the potential to impact adversely and result in the temporary degradation of the local visual environment on a short-term basis. Construction works are likely to take place on a phased basis, which will moderate the potential impacts on adjoining land use. The Construction Environmental Management Plan addresses these issues in more detail.

As the development is on greenfield land, there is no proposed demolition and will therefore not cause any significant disturbance to the adjoining properties given the nature of the work and the generous setbacks to adjoining development.

There will be an increase in population on the site during construction as a result of the proposed development. Given the location and size of the subject site, the rise of employment numbers on-site is not considered to negatively impact the surrounding community. There may be some increase in traffic on Clonard Road from the north and south to access the site, however, this is considered to be within reason, and will be managed in accordance with the Traffic Management Plan.

Construction works are likely to take place on a phased basis over 36 months, which 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.

Operational Phase

The operational phase will see former agricultural land transformed into residential land use which is in keeping with planning policy, helps address the growing population and housing shortage across Ireland and Dublin in particular. In light of the existing housing crisis, it is considered that a high-density development at this location would result in a likely significant positive impact as it would realise the objective of compact urban growth through the efficient and effective use of zoned and services landbank to provide much needed housing for future populations.

The development will include public open space to be utilised by the surrounding community. The public open space will be fronted by the proposed public open space in the form of a large open park located west of the site will contribute to the community.

4.6 Housing

4.6.1 Receiving Environment (Baseline Scenario)

Housing completions across the country plummeted after the recession occurred in 2007/2008 with completions declining from almost 90,000 no. per year in 2007 to approximately 11,000 no. in 2014. In light of this, the Government published the 'Rebuilding Ireland - Action Plan for Housing and Homelessness' policy document to increase housing supply. This document has been subsequently replaced by the 'Housing for All - A new Housing Plan for Ireland' was published in September 2021 as part of the Irish Government's 'Our Shared Future' programme which, in turn, sets out the Government's mission to tackle the housing crisis. The objective of the plan is to ensure that everybody has *access to sustainable, good quality housing to purchase or rent at an affordable price, built to high standard, and located close to essential services, offering high quality of life.*

The plan seeks to increase new housing supply to an average of at least 33,000 new units per year with specific pathways outlined to achieve the four overarching objectives of the plan which are:

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

According to the CSO Q4 New Dwelling Completions Report, 17,952 and 21,241 new dwellings were completed in 2018 and 2019, respectively. In Q4 2020 and 2021, the number rose to 20,526 and 20,433 new dwellings respectively. In period from 2019-2021, the number of dwellings constructed fell short of the target set in the 'Rebuilding Ireland - Action Plan for Housing and Homelessness' policy document which sets a target to construct 25,000 new homes annually to 2021.

The National Planning Framework - Ireland 2040 requires delivery of a baseline of 25,000 homes annually to 2020, followed by a likely level of 30-35,000 annually up to 2027. Within this output 112,000 households are expected to have their housing needs met in a social housing home over the next decade. To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing footprint of built-up areas.

The Fingal Development Plan 2023-2029 identifies Balbriggan as a) Self Sustaining Towns and the Regional Planning Guidelines for the Greater Dublin Area 2010-2022 identifies Balbriggan as a 'Large Growth Town II'. The Core Strategy contained therein indicates that the population will continue to increase in Balbriggan for the foreseeable future. Fingal County Council assigned a Projected Housing Demand (Units) of 1,902 for 2023-2029 in the Fingal Core Strategy is earmarked for an increase in

population to 27,370 by 2029 in the Core Strategy contained within the Fingal County Development Plan 2023-2029.

Further to the above, the Regional Spatial and Economic Strategy for the Eastern and Midland Region (Draft RSES), published in 2019, identifies Balbriggan as an 'Core Region'.

The Core Region contains a strong network of county and market towns that have a good level of local employment, services and amenities, which serve not just their resident populations but a wider catchment area.

Compact and focused growth in the Regional Growth Centres of Drogheda and Dundalk, growing them to a city scale, is also outlined as one of the growth enablers for the Dublin Belfast Corridor. Future transport links planned for Balbriggan include an electric/hybrid rail service connecting Balbriggan to Dublin City Centre and re-enforcing the ability of the inhabitants to commute to Dublin City for work.

4.6.2 Potential Impact of the Proposed Development

'Do Nothing' Scenario

There are currently no persons residing on the subject lands. The subject site comprises a brownfield site with existing buildings on site comprising industrial and commercial units. Were the development not to proceed, this scenario would continue and the site would remain in its current use.

The impact of a 'do nothing' scenario would be negative in terms of housing in the Walkinstown area as the subject site would fail to realise the development potential afforded by its regeneration zoning.

Construction Phase

As discussed in Section 4.3.2 previously, the construction phase of the proposed development will see no additional persons will be housed on site and therefore it is not anticipated to impact on the quantum of or access to housing. The amenity of the surrounding area will be affected during construction however this impact is temporary and not considered to be significant.

Operational Phase

The proposed development will result in the addition of 564 no. units to the supply of housing in the Balbriggan area. These will be a mixture of 1-bedroom, 2-bedroom, 3-bedroom and 4-bedroom apartments/duplexes/houses.

The addition of these proposed units will contribute to the housing unit target outlined in the Fingal Development Plan 2023-2029.

4.7 Community Infrastructure and Social Facilities

4.7.1 Receiving Environment (Baseline Scenario)

This section of the EIAR assesses the impact of the proposed development on the local community and the social infrastructure and facilities in the vicinity of the subject site.

Fingal, and more locally Balbriggan contains a wide range of community infrastructure including education facilities; facilities associated with social service provision; health and medical centres; nursing homes; childcare facilities including private nurseries; community facilities; libraries, religious buildings; and cemeteries.

The subject site is located on the periphery of the built-up area of Balbriggan. The spread of the population is contained to the north, east and south of the subject site. The population is sparse west of the site, which is predominantly rural in nature.

There are a number of recreational and sporting facilities within proximity to the site. To the south of the lands along Clonard Road is Bremore Educate Together Secondary School, Coláiste Ghlór na Mara, Scoil Chormaic CNS, St. George's National School, Balbriggan Sports Centre, Public Playground on Harry Reynolds Road, Energie Fitness Balbriggan, Pulse Fitness Club, Phoenix Fitness Gyms, b-Well Pilates Reformer, Excellence Gym Limited, Bike Row Ski Balbriggan, Platinum Gyms, HITZone Balbriggan, O'Dwyers GAA - All Weather Pitch, Balbriggan, Balbriggan Golf Club, Balbriggan Rugby Club, Balbriggan FC academy, Elm Mount Football Club, Balbriggan FC, and Mosney United Football Club all within 5km of the subject site.

It is noted that the Balbriggan area offers a wide range of community infrastructure including education facilities; facilities associated with social service provision; health and medical centres; childcare facilities including private nurseries; sporting and recreation facilities; social/community facilities; and religious buildings. There are also passive recreation facilities including public houses, restaurants, cinemas etc.

4.7.2 Potential Impact of the Proposed Development

'Do Nothing' Scenario

There are no social services currently located on the subject site, therefore there would be a neutral impact in a 'do nothing' scenario.

Construction Phase

The construction of the proposed development will unlikely have any significant implications to the existing community infrastructure and social facilities. The immediate effects of the construction phase will be centred around the subject site. The construction phase will have some impacts on the surrounding environment through noise and increased traffic. There are however no foreseeable short-term construction impacts that will impact negatively on the community infrastructure or social facilities.

Operational Phase

The population growth that will occur as a result of the proposed development will provide a positive impact to the Balbriggan environs and will contribute to the existing social and community infrastructure. The new residents of the development would likely lead to increased funding and patronage of existing services and facilities. The overall size of the development and population growth will not be of vast proportions that the existing community and social infrastructure cannot cope with the demand. In addition, the critical mass generated by the proposal would likely create demand for new facilities and services, which would indirectly benefit the wider area.

The commercial units and childcare facility featuring within the proposed development, due to the proposed positioning and access arrangements, will serve both residents of the subject development and the surrounding area more broadly. This will improve community infrastructure and social facilities in this area.

The inclusion of landscaped public open space areas, new commercial activities and facilities will enable more residents and visitors to gain access to the high-quality open space, improving residents' ability to lead a healthy lifestyle, and will improve pedestrian safety. This will be a significant positive impact of existing and future residents.

It is therefore considered that the proposal will not have any adverse impacts on the existing community and social infrastructure.

4.8 Health and Safety

4.8.1 Receiving Environment (Baseline Scenario)

The subject site is a greenfield site, currently in use for agricultural practices, located to the north-west of Balbriggan, south of Flemington Lane and north of the Naul Road. The site has been zoned for residential development within Fingal County Council's Development Plan for a number of years and is located on the periphery of similar residential developments on the western outskirts of Balbriggan. Similar developments have been granted permission in the surrounding area in recent years, paving the way for a high-density suburb with strong transport links to Dublin.

As noted previously, the lands surrounding the subject site to the north and south are predominantly greenfield in nature and under agricultural use. The sites western boundary is flanked by the M1 motorway, with the land further west of this also greenfield in nature and under agricultural use. To the east of the subject site are established residential developments.

Whilst the subject site lands have predominantly operated as agricultural land, present zoning reflects changing land use patterns for this area, west of the town of Balbriggan. The zoning of the land provides an opportunity for Balbriggan to increase its population and employment opportunities.

As Figure 4.3 above outlines, the subject site is zoned both RA - Residential Area. The objective for RA - Residential Area zoned land is '*Provide for new residential communities subject to the provision of the necessary social and physical infrastructure*'. This is reflective of the subject application which proposes residential development.

The former greenfield site and surrounding land uses are, similar to surrounding land, becoming more connected to the Balbriggan township through residential and commercial development and the public transport routes servicing the town.

4.8.2 Potential impact of the Proposed Development

'Do Nothing' Scenario

The site is in a greenfield state and is used for agricultural purposes. The subject site does not contain any dwellings and therefore does not currently accommodate a resident population. Were the development not to proceed, this scenario would continue and the site would remain in its current use. Accordingly, there would be a neutral impact on health and safety in a do-nothing scenario.

Construction Phase

The construction of the proposed development will give rise to several short-term impacts which will include noise, dust and an increase in traffic flow arising from site workers, deliveries etc. The construction impacts are dealt with in the relevant chapters of this EIAR document. In general, the construction of the proposed development will be done so in accordance with the Construction Management Plan and Traffic Management Plan (both of which will be agreed with Fingal County Council) which will ensure that the works do not pose an adverse risk to the health and safety of both the surrounding properties/community and the workers on-site. Particular care will be taken in relation to construction proximate to the existing petrol station being retained on site.

The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts. The development will also comply with all Health & Safety Regulations during the construction of the project.

The construction of the development may also generate localised dust during the demolition and construction phases. Mitigation measures will be implemented during construction to control dust and other air pollutants to ensure that the residual impact on Human health will be short-term, slight to moderate negative in nature.

The potential impact on human beings in relation to noise and vibration during the construction phase in the absence of mitigation is that high levels of noise and vibration could impact people in noise sensitive areas. Implementation of the mitigation measures set out in Chapter 8 of this EIAR as well as measures within the Construction and Environmental Management Plan (CEMP) will ensure that the residual impact on Human health will be short-term, slight to moderate negative in nature.

The potential impacts on human beings in relation to the generation of waste during the demolition, construction and operational phases would occur from the incorrect management of waste. This could result in littering which could cause a nuisance to the public and attract vermin. A carefully planned approach to waste management and adherence to the project specific CWMP and OWMP, will ensure appropriate management of waste and avoid any negative impacts on the local population. Given the nature of the development when operational, the predicted residual effects during the operation phase are long-term, imperceptible and neutral.

There is a risk to Human Health should the ground water or the existing water supply become contaminated during the construction or operational stages, and the water is consumed. In order to mitigate these risks the measures outlined within the EIAR will be adopted. source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be negative, short-term, localised and imperceptible with respect to human health.

Given the above, it is considered that the construction impacts of the proposed development on health and safety will be short-term, slight and negative.

Operational Phase

The operational stage of the development is unlikely to precipitate any significant 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 paths, roadways and public areas have all been designed in accordance with best practice and the applicable guidelines. Likewise, the proposed residential units accord with the relevant guidelines and will meet all relevant safety and building standards and regulations, ensuring a development which promotes a high standard of health and safety for all occupants and visitors.

The inclusion of multiple open space areas throughout the development will increase the availability of exercise and leisure activities. This will encourage residents and visitors to move around the site therefore giving a greater level of physical activity improving the physical health of the local people whilst also improving the levels of mental health and wellbeing.

The scheme is designed to encourage more sustainable forms of transport including walking, cycling and an increased use of public transport, as well as upgrades to the surrounding road network. Walking and cycling can help increase activity levels which again can help improve cardiovascular health, mental health and wellbeing. The increased level of sustainable journeys will help to reduce the level of car use in and around the area. Reduced car use is linked to improvements in air quality levels which is beneficial for respiratory health. The operation of the proposed development will therefore have a long term, moderate positive effect on residents and visitors.

The proposed development will not result in any significant impacts on human health and safety once completed and operational. The impacts on population and human health to future residents from the surrounding area has been assessed with mitigation measures proposed to reduce any impacts on human health as a result of noise, dust, air quality during the operation of the proposed development. The implementation of mitigation measures throughout the scheme ensures that the proposed development therefore is unlikely to result in negative impacts in relation to population and human health in this regard.

4.9 Risk of Major Accidents and Disasters

4.9.1 Receiving Environment (Baseline Scenario)

The 2018 EIA Guidelines state that an EIAR must include the expected effects arising from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project. Regarding natural disasters, the site does not occur in an area prone to earthquakes or volcanic eruptions.

Annex IV of the Directive 2011/92/EU as amended by Directive 2014/52/EU refers to both a proposal's potential to cause accidents/disasters and to the vulnerability of the proposal to accidents/disasters. These risks can be from both man-made and natural disasters and there is a requirement to build resilience into projects and to invest in risk prevention. Regarding natural disasters, the site does not occur in an area prone to earthquakes or volcanic eruptions.

In respect of man-made accidents and disasters, the site does not occur within the consultation distance of any Tier 1 or Tier 2 SEVESO III site.

There is potential for risk of accidents to occur given the proximity of the M1 Motorway to the subject site. Due to the slope of the land increasing from the M1 Motorway to the subject site, the 1,000 metre separation distance that is provided and the extent of vegetation planted, it is considered that no major vehicle accident on the M1 motorway will pose a risk to the residential development.

The development is located in a Flood Zone C category. This flood zone in accordance with the "The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009" is considered to be of the lowest significance type flood zone, having a very remote chance and consequential outcome of flooding. The risk of flooding for the development is minimal and within the acceptable limits.

The identification and assessment of risks of accidents and/or disasters is provided in chapters 5, 6, 7, 8, 9, 12 and 13 of this EIAR.

4.9.2 Potential impact of the Proposed Development

'Do Nothing' Scenario

Were the development not to proceed, risk would be low to major accidents noting no works would be proposed. From a traffic accident, risk would also be low noting access to the site will remain as existing.

Construction Phase

The construction of the proposed development will be done so in accordance with a Construction and Environmental Management Plan, prepared by GDCL to manage the day to day proceedings and to ensure that works on site do not create an unsafe environment. The construction traffic entering and exiting the site will be managed appropriately through a Traffic Management Plan which will be agreed with Fingal County Council prior to construction commencing.

Therefore, there is not expected to be any major accidents or disasters as a result of the construction of the proposed development.

This assessment did not identify significant risks to human health during the construction phase. The proposed construction traffic was found to have a minimal and insignificant impact in terms of traffic, air quality and noise.

Operational Phase

This assessment found that the risk of accidents arising from the scheme was low, and the proposed works will significantly improve pedestrian and cyclist accessibility and safety within the subject lands. In this way, no significant impacts on human health were identified.

4.10 Cumulative Impacts

The cumulative effects of the development on the surrounding population and human health have taken into consideration the existing surrounding environment, and in particular the established developed lands located east of the application site, and the lands surrounding Balbriggan town.

The development of the site will likely have a positive cumulative impact on Balbriggan in helping the town accommodate the projected growth which has been projected to be over 5,000 people, according Table 2.14 of Fingal's Development Plan 2023 – 2029. The economy will benefit both during the construction phase and operation phase increasing the economic activity within the town. The site is well connected with access into Balbriggan via R122 Road and is within proximity of the M1 Motorway.

The only cumulative impact of the proposed development will be a further increase in the population of the wider area. This impact is likely to be long term and is considered to be positive, having regard to the zoning objective for the subject lands, and their strategic location in close proximity to high quality, high frequency public transport, and the high level of demand for new housing in Dublin.

With regard to human health, the cumulative impact of the proposed development in conjunction with other nearby developments will provide for the introduction of high quality new neighbourhoods in the area with a high level of accessibility and amenity. The overall cumulative impact of the proposed development will therefore be long term and positive with regard to human health, as residents will benefit from a high quality, visually attractive living environment, with ample opportunity for active and passive recreation and strong links as well as access to commercial/retail facilities within the development.

The development of the site will likely have a positive cumulative impact on Balbriggan in helping the area contribute to the projected growth for South Dublin. The economy will benefit both during the construction phase and operation phase increasing the economic activity within the town.

There are not considered to be any significant adverse cumulative impacts to the population and human health either during construction or operation phase of the proposed development on lands located to the south of Flemington Lane, Balbriggan, Co. Dublin.

4.11 Mitigation Measures

Construction Phase

All standard health and safety procedures will be implemented at every stage of this project. The Main Contractor for the project is responsible for the method in which the construction works are carried out and to ensure that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. Further to this, Building Regulations will also be adhered to during the construction phase. The health and safety procedures are set out in the Construction and Environmental Management Plan which will provide a mechanism for the implementation of the construction mitigation measures set out within the EIAR.

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics discussed under each. These measures seek to ensure that any likely significant adverse environmental impact on human health during the construction phases are either ameliorated to have an acceptable level of impact or avoided altogether. Included in these measures is the requirement that a detailed construction traffic management plan be prepared by the Contractor and agreed with Fingal County Council as the Road Authority prior to commencing works on the public road. This Construction Traffic Management Plan will include restrictions on deliveries and access to the construction site. Further, measures with regards to noise and dust abatement covered elsewhere within this EIAR will be implemented during construction and will limit impacts on population and human health. The measures set out within the Construction Environmental Management Plan and Operational Waste Management Plan will be strictly adhered to.

Further to the above, working hours on site will be as such that the residential amenity of adjacent residences is not unreasonably impacted upon. They will be agreed with the Council in full as part of the required construction management plan.

As a result of the implementation of the abovementioned measures, the impacts of the construction phase of the development on population and human health are not anticipated to be significant and will have an imperceptible and neutral impact in terms of health and safety. Furthermore, all impacts will be temporary in nature.

Operational Phase

The proposed development has been designed to avoid negative impacts on population and human health through the inclusion of landscaping, the provision of a creche, provision of energy efficient measures and through high quality finishes and materials. The mitigation measures relating to the operation phase of the development concerning traffic, transport, noise, vibration, water, air and dust quality and landscaping as set out in this EIAR (and listed in Chapter 16.0) will be carried out in full to minimise impacts on residents of the development, adjacent residents and human health.

4.12 Residual Impacts

It is anticipated that the proposed development will realise significant positive overall economic and social benefits for the local community and the wider Balbriggan area.

Strict adherence to the mitigation measures recommended in this EIAR will ensure that there will be no negative residual impacts or effects on Population and Human Health from the construction and operation of the proposed scheme. Indeed, the delivery of much needed housing will realise a likely significant positive effect for the local area.

4.13 Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development. There is no other ongoing monitoring required in relation to the effect of the proposed development on the population and human health.

4.14 References

- Central Statistics Office www.cso.ie.
- Central Statistics Office (2016) - Census 2016.
- Central Statistics Office (2018) - CSO Statbank.
- DoHPLG (2017) Rebuilding Ireland - Action Plan for Housing and Homelessness.
- South Dublin County Development Plan 2016-2022
- ESRI Quarterly Economic Commentary (June 2019).
- 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, Draft August 2017).

5.0 BIODIVERSITY

The Biodiversity assessment has been undertaken by Altemar 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.

5.1 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, 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 *“On the basis of the content of this report, the competent authority is enabled to conduct a Stage 1 Screening for Appropriate Assessment and consider whether, in view of best scientific knowledge and in view of the conservation objectives of the relevant European sites, the Proposed Development, individually or in combination with other plans or projects is likely to have a significant effect on any European site.”*

5.1.1 Quality Assurance and Competence

Altemar 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 Altemar 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 Altemar 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 Altemar staff. He has extensive experience in ornithological and in mammal assessments.

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 the wintering bird assessments.

5.1.2 Description of the Proposed Development

A ten-year permission for a Large-scale Residential Development (LRD) at this site at Lands off Flemington Lane, Balbriggan, Co. Dublin.

The proposed development will consist of the following:

- (i) *The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*

- (ii) *The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35 no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:*
- (a) *Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).*
- (b) *Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.*
- (c) *Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes) and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).*
- (d) *Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8 no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.*
- (e) *Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments*

(6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).*
- (iv) the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.*
- (v) the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.*
- (vi) a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.*

5.2 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. 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 5-1.

Table 5.1 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
Mammal Assessment	Bryan Deegan (Altamar)	18 th March 2021, 20 th April 2021 & 8 th April 2023
Breeding Birds	Frank Spellman (Altamar)	12 th May 2023
Bat Fauna	Bryan Deegan (Altamar)	20 th April 2021, 08 th June 2023, 13 th June 2023, 27 th June 2023
Wintering Bird Survey	Joesph Adamson	27 th and 28 th February & 7 th , 18 th and 21 st March 2023

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 Martin Peters Associates 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, which in turn outfalls to the 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, which is within capacity..

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 Bremore 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 2.0** of this EIAR. The proposed project construction methodology, layout, drainage strategy, Construction Management Plan, design and landscape design were reviewed to inform this assessment. Further, the other chapters within the EIAR were assessed.

5.2.1 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.

5.2.2 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 5.1. 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. Habitat mapping was carried out according to Fossitt (2000) using ArcGIS 10.5 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.

5.2.3 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 on the 20th April 2021, 08th June 2023, 13th June 2023 and 27th June 2023.

5.2.4 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).

5.2.5 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 a detector survey was possible. Insects were observed in flight during the bat survey. Flora, amphibian, habitat and mammal assessments were carried out within the optimal survey period.

5.2.6 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).

5.3 Existing Receiving Environment

5.3.1 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 in-stream works and foul and surface water drainage strategy. This site outline is shown in figure 5-1.

5.3.2 Designated sites

As can be seen from Figures 5.2 (SAC's within 15km), 5.3 (SPA's within 15km), 5.4 (NHA and pNHA within 15km), 5.5 (Watercourses proximate to the site), there is one Natura 2000 site (River Nanny Estuary and Shore SPA) within 15km and two National conservation sites (Knock Lake pNHA and Bog Of The Ring pNHA) within five kilometres 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 5.2a and Table 5.2b. 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 Martin Peters Associates 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, which in turn outfalls to the 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 that outfall to the Bremore 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. Watercourses and designated conservation sites located proximate to the proposed development site are demonstrated in Figures 5.6-5.12.

Table 5.2a 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	9.2 km	No
Boyne Coast and Estuary SAC	9.6 km	No
Rogerstown Estuary SAC	11.3 km	No
River Boyne And River Blackwater SAC	13 km	No
Malahide Estuary SAC	14.8 km	No
Special Protection Areas (SPA)		
River Nanny Estuary and Shore SPA	3.7 km	No
Skerries Islands SPA	7.6 km	No
Rockabill SPA	9.7 km	No
Rogerstown Estuary SPA	11.3 km	No
Boyne Estuary SPA	11.6 km	No
Malahide Estuary SPA	14.8 km	No

Table 5.2b 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	7.5 km	No
pNHA	Knock Lake	2.1 km	No
pNHA	Bog Of The Ring	2.8 km	No
pNHA	Laytown Dunes/Nanny Estuary	5.4 km	No
pNHA	Cromwell's Bush Fen	7.4 km	No
pNHA	Loughshinny Coast	9.1 km	No
pNHA	Boyne Coast And Estuary	9.6 km	No
pNHA	Rogerstown Estuary	11.3 km	No
pNHA	Rockabill Island	13 km	No
pNHA	Duleek Commons	13.8 km	No
pNHA	Portraine Shore	14.1 km	No
pNHA	Malahide Estuary	14.8 km	No
Ramsar	Rogerstown Estuary	11.3 km	No
Ramsar	Broadmeadow Estuary	14.8 km	No



Figure 5.1: Proposed Development Site

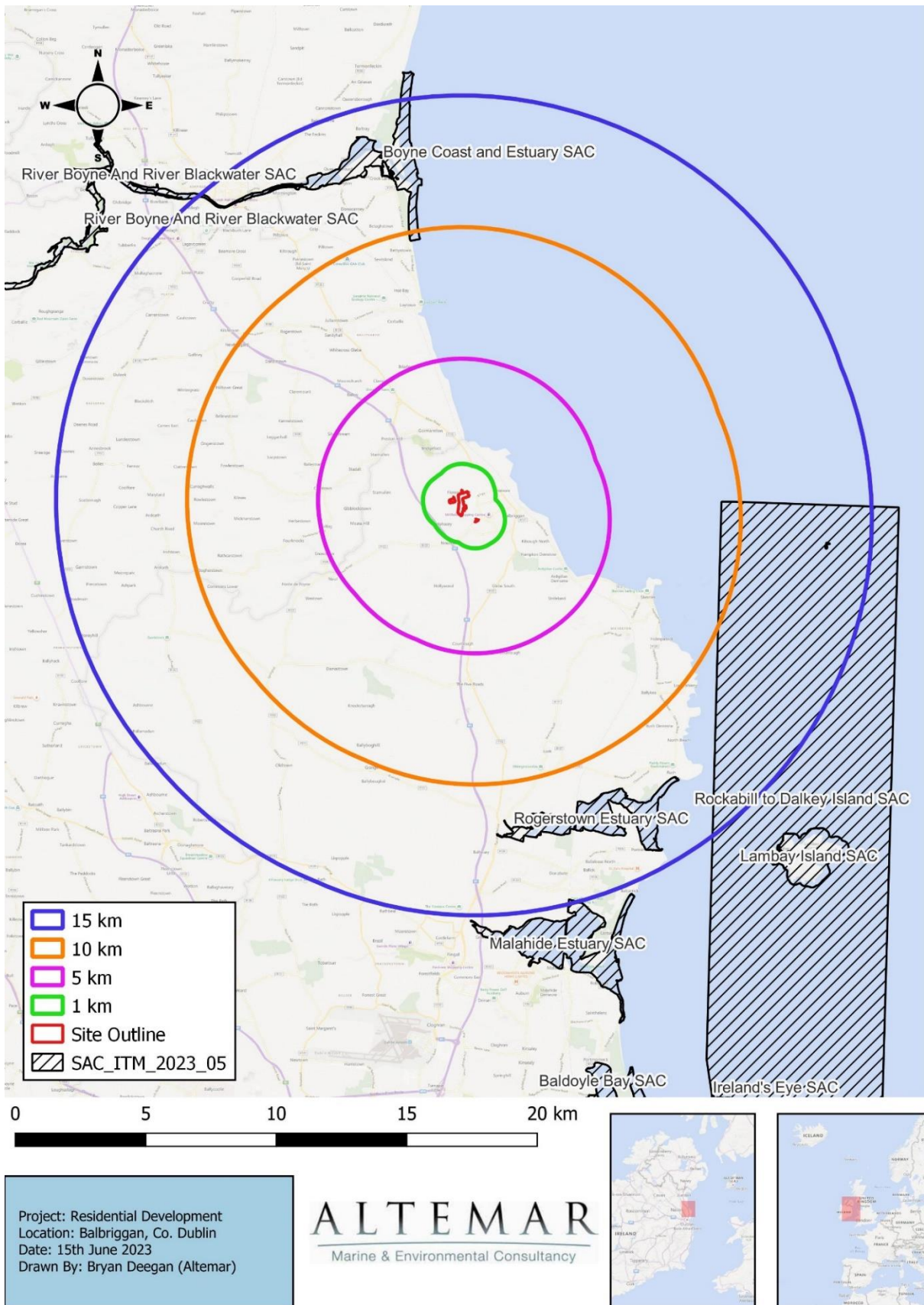


Figure 5.2: Special Areas of Conservation within 15km

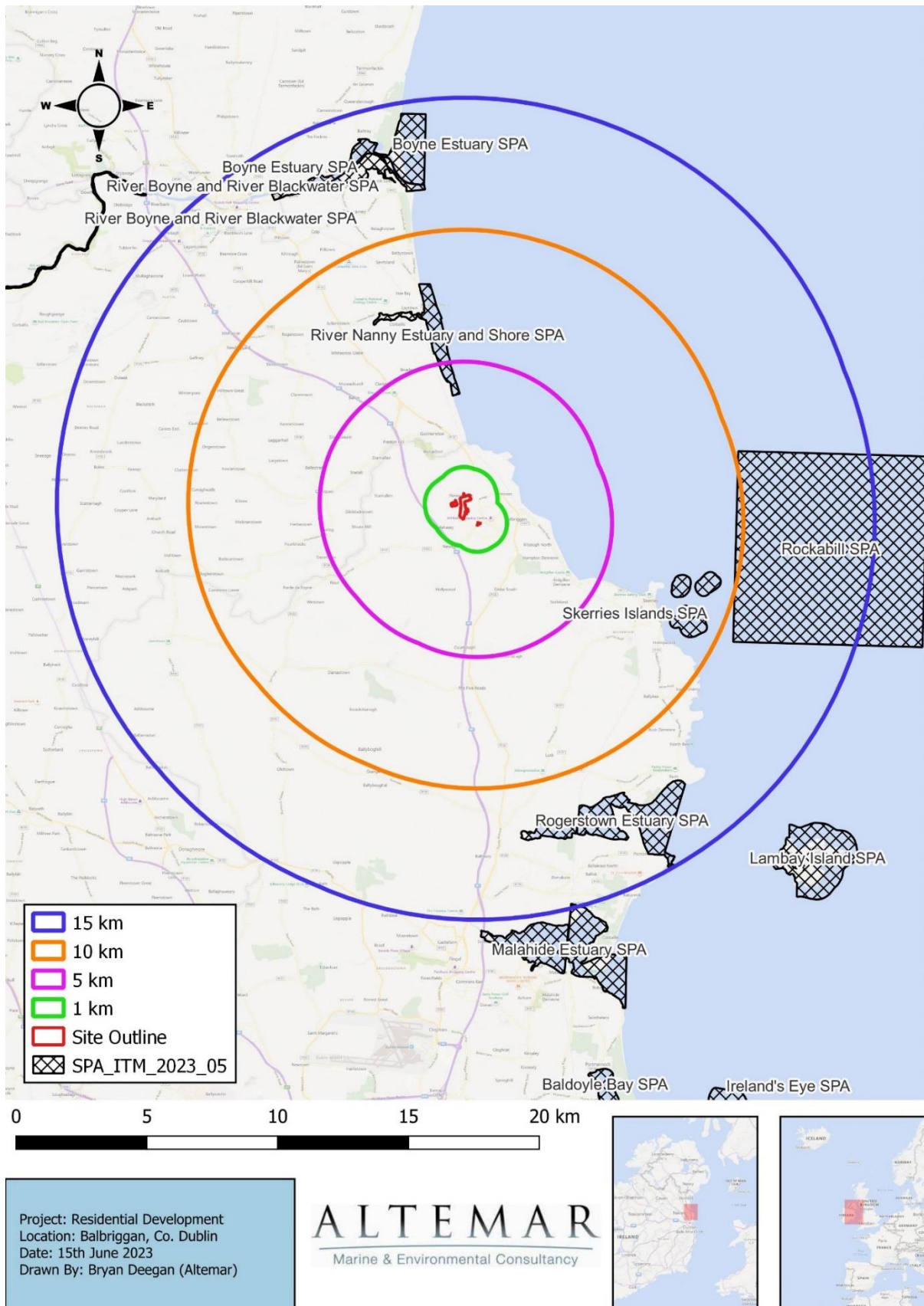


Figure 5.3: Special Protection Areas within 15km

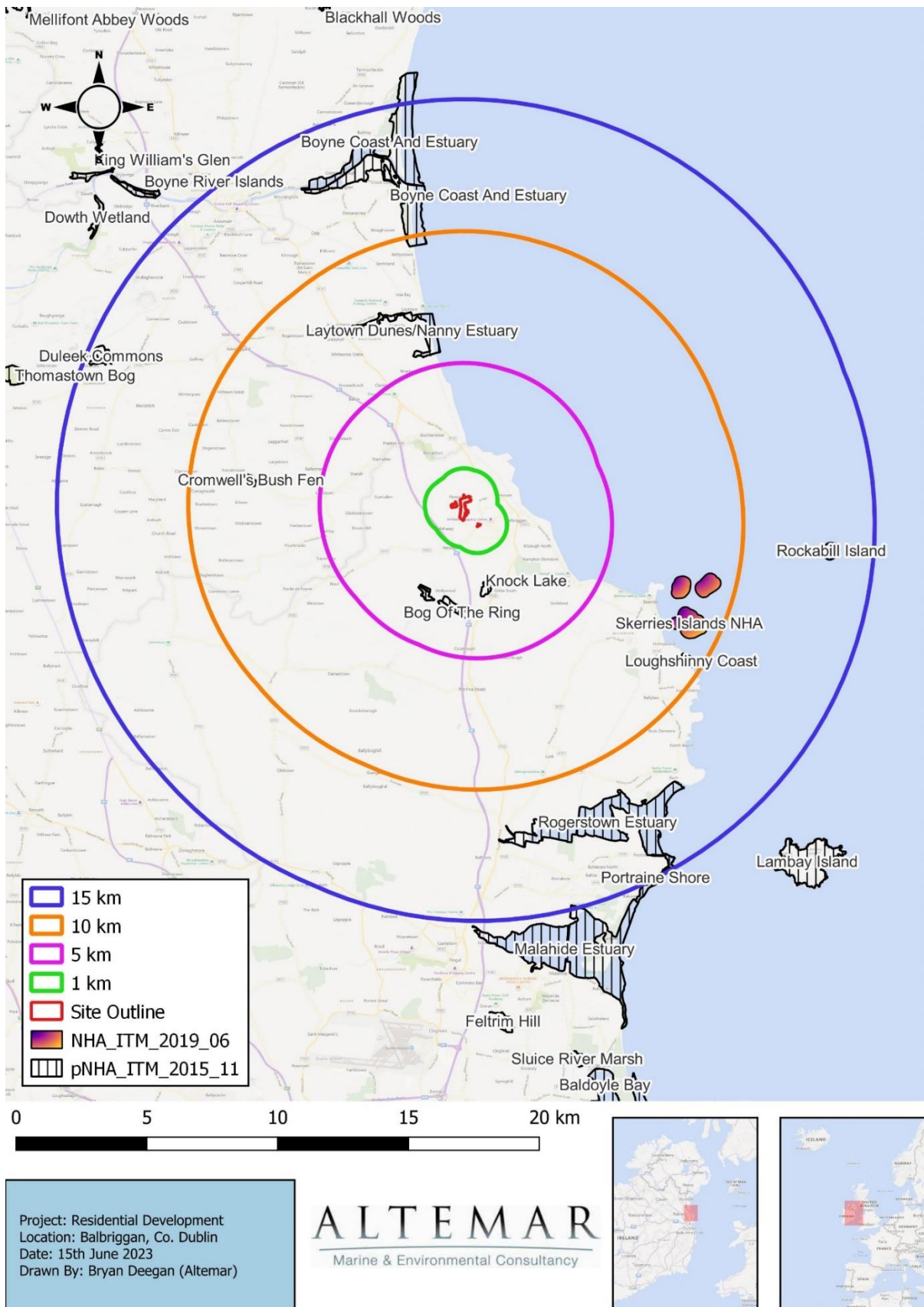


Figure 5.4 – Natural Heritage Areas and proposed Natural Heritage Areas within 15km

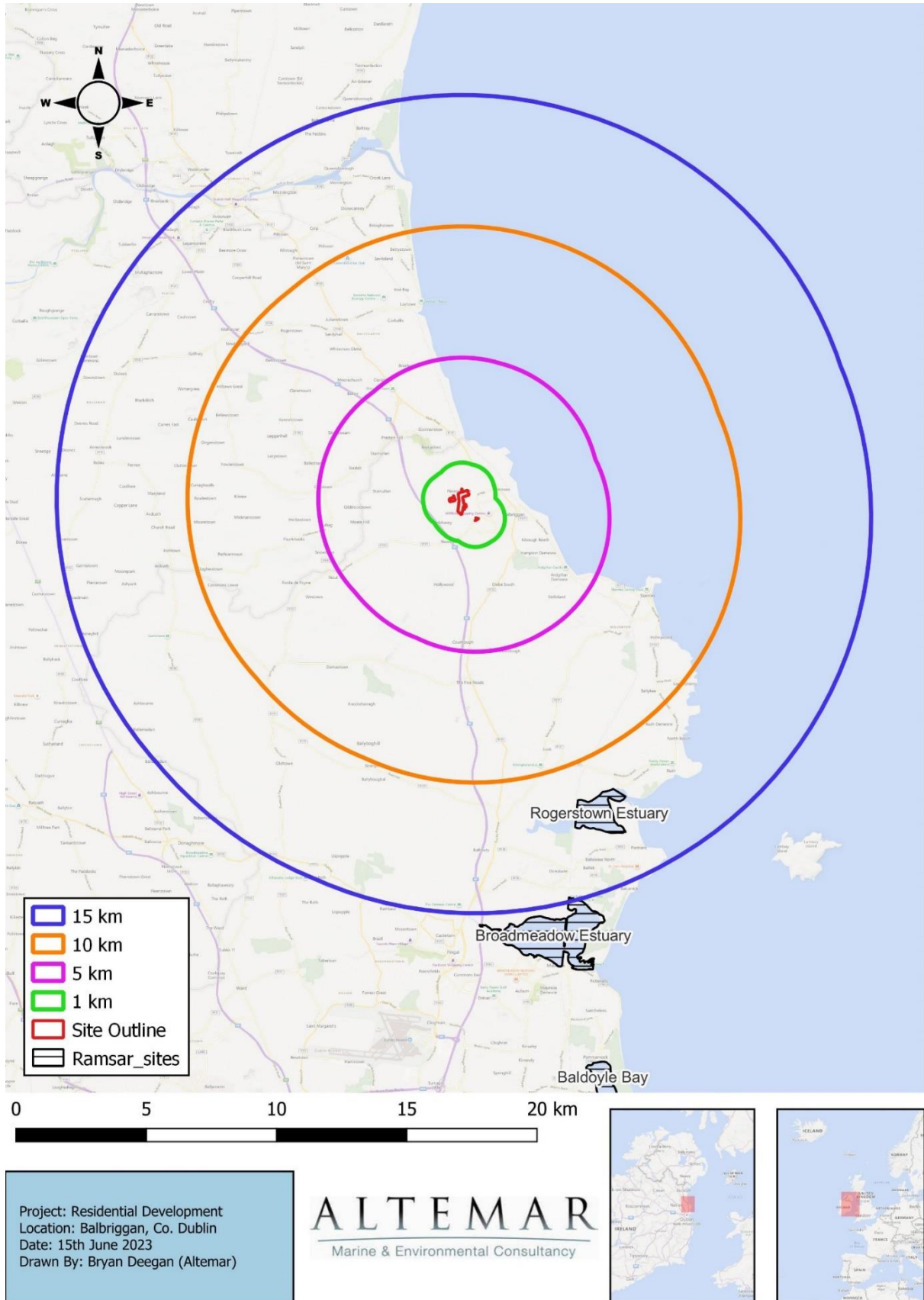


Figure 5.5 – Ramsar Sites within 15km



Figure 5.6 – Watercourses within the subject site

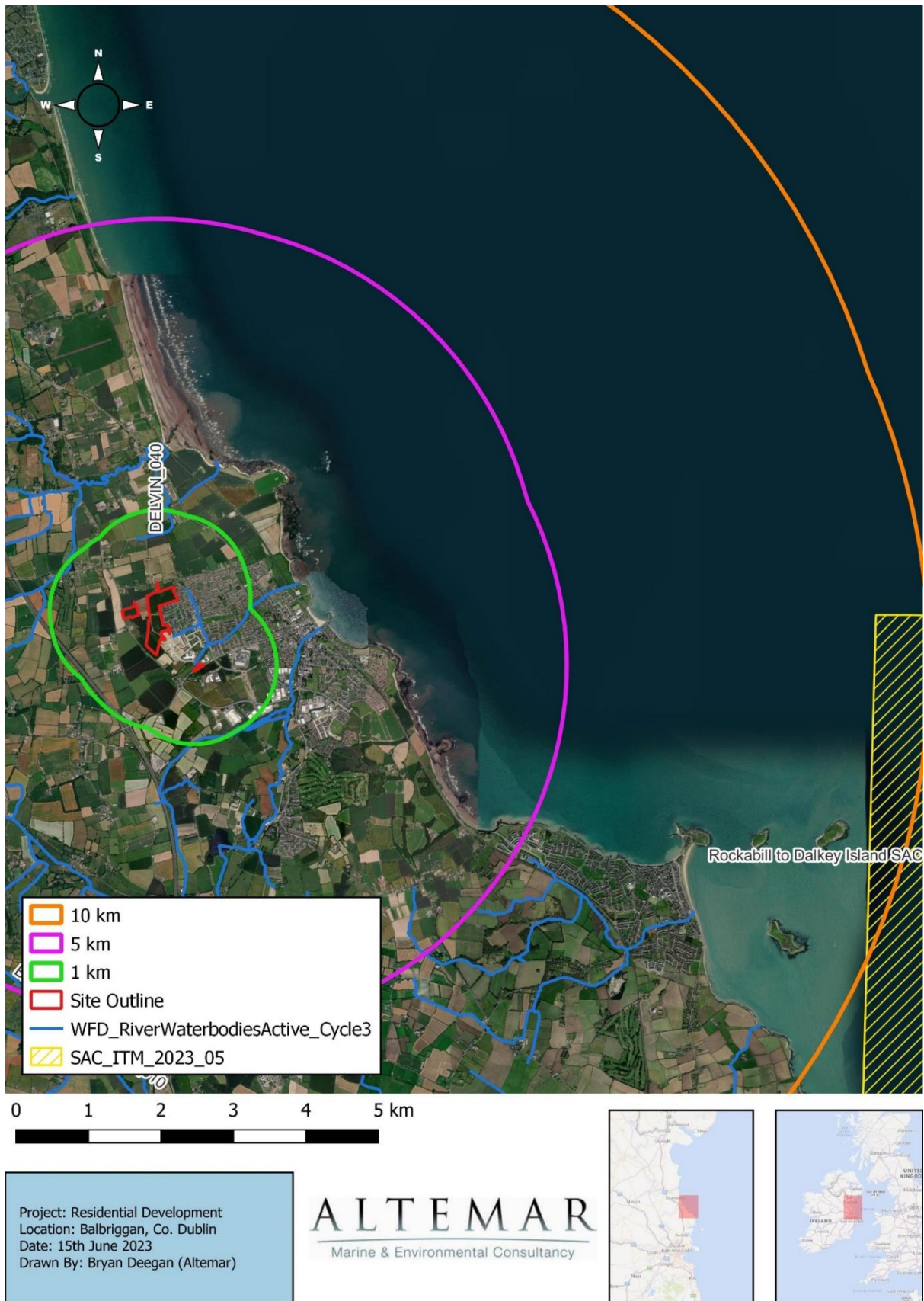


Figure 5.7 – Watercourses and SACs with the potential for a hydrological connection

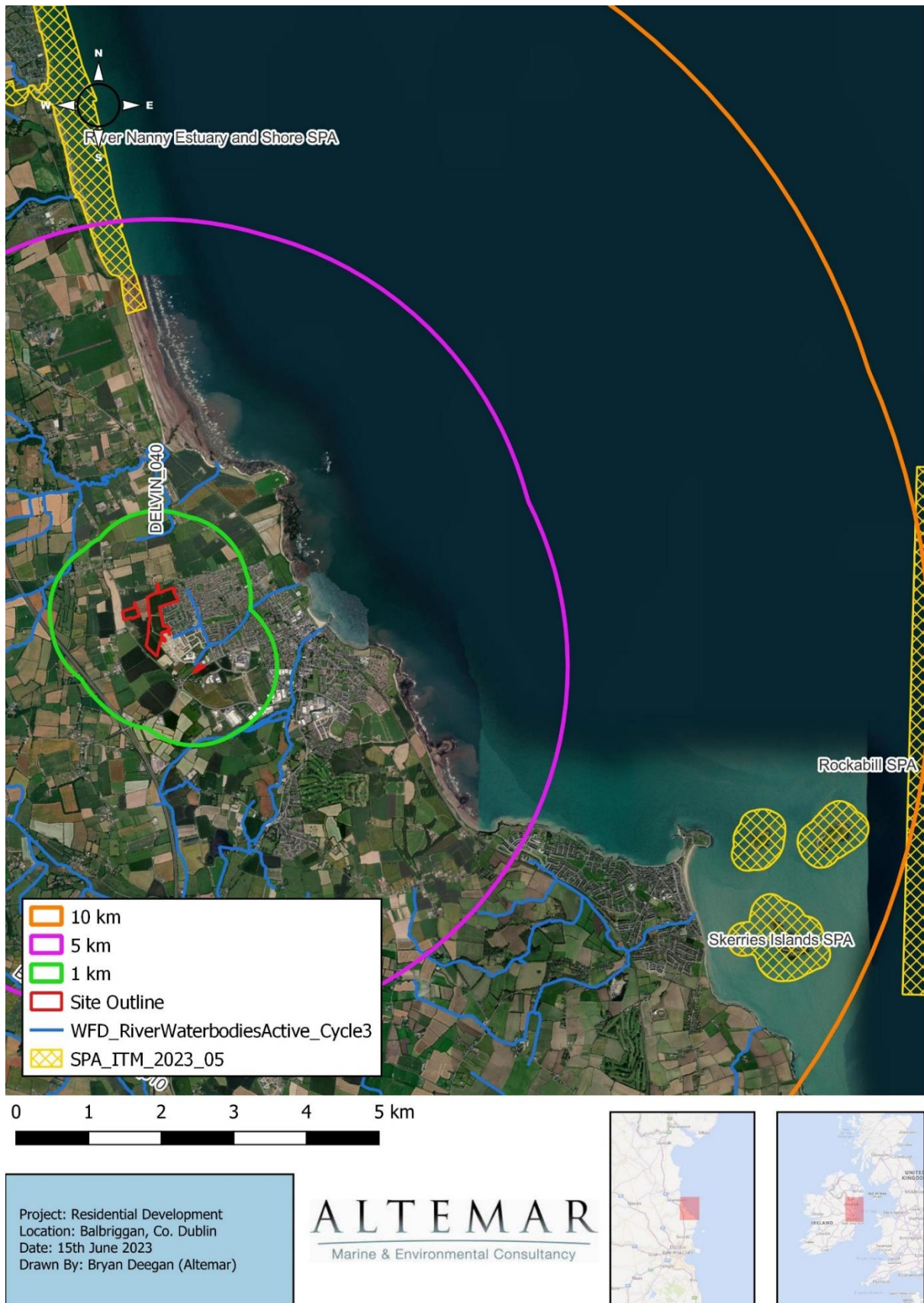


Figure 5.8 – Watercourses and SPAs with the potential for a hydrological connection

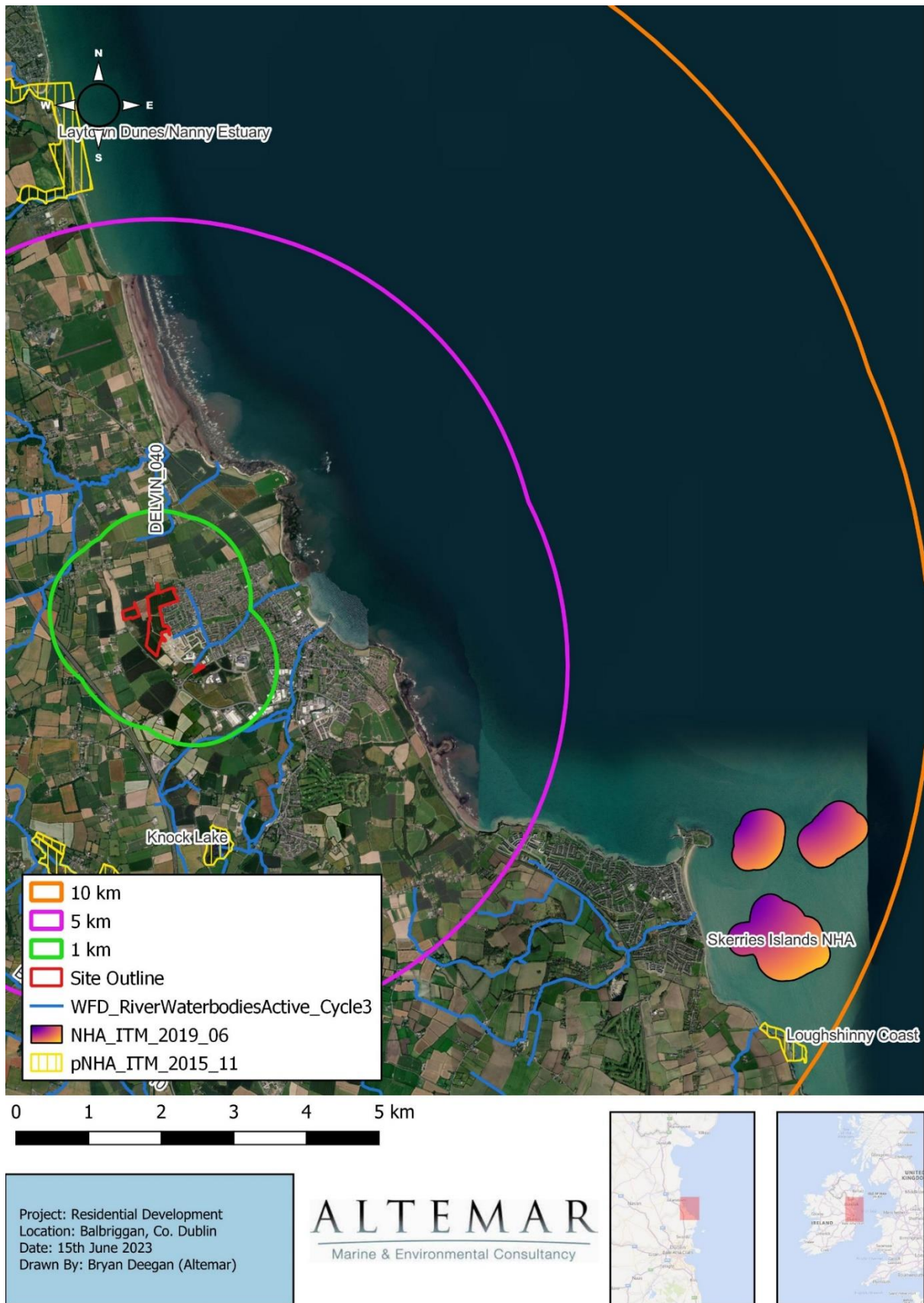


Figure 5.9 – Watercourses and NHAs and pNHAs with the potential for a hydrological connection

5.3.3 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 5.3.

Table 5.3. National Biodiversity Data Centre Records within the four 2km² grids (O16S, O16R, O16W, O16X)

<p><i>Common Frog (Rana temporaria), Barn Owl (Tyto alba), Barn Swallow (Hirundo rustica), Bar-tailed Godwit (Limosa lapponica), Black-headed Gull (Larus ridibundus), Black-legged Kittiwake (Rissa tridactyla), Black-tailed Godwit (Limosa limosa), Brent Goose (Branta bernicla), Common Greenshank (Tringa nebularia), Common Guillemot (Uria aalge), Common Kestrel (Falco tinnunculus), Common Kingfisher (Alcedo atthis), Common Linnet (Carduelis cannabina), Common Pheasant (Phasianus colchicus), Common Redshank (Tringa totanus), Common Scoter (Melanitta nigra), Common Snipe (Gallinago gallinago), Common Starling (Sturnus vulgaris), Common Swift (Apus apus), Common Wood Pigeon (Columba palumbus), Dunlin (Calidris alpina), Eurasian Curlew (Numenius arquata), Eurasian Oystercatcher (Haematopus ostralegus), Eurasian Tree Sparrow (Passer montanus), European Golden Plover (Pluvialis apricaria), European Shag (Phalacrocorax aristotelis), Great Black-backed Gull (Larus marinus), Great Cormorant (Phalacrocorax carbo), Great Crested Grebe (Podiceps cristatus), Great Northern Diver (Gavia immer), Grey Plover (Pluvialis squatarola), Greylag Goose (Anser anser), Herring Gull (Larus argentatus), House Martin (Delichon urbicum), House Sparrow (Passer domesticus), Jack Snipe (Lymnocyptes minimus), Lesser Black-backed Gull (Larus fuscus), Little Egret (Egretta garzetta), Merlin (Falco columbarius), Mew Gull (Larus canus), Northern Lapwing (Vanellus vanellus), Peregrine Falcon (Falco peregrinus), Pink-footed Goose (Anser brachyrhynchus), Razorbill (Alca torda), Red Knot (Calidris canutus), Red-breasted Merganser (Mergus serrator), Red-throated Diver (Gavia stellata), Ringed Plover (Charadrius hiaticula), Rock Pigeon (Columba livia), Sand Martin (Riparia riparia), Short-eared Owl (Asio flammeus), Sky Lark (Alauda arvensis), Spotted Flycatcher (Muscicapa striata), Stock Pigeon (Columba oenas), Velvet Scoter (Melanitta fusca), Water Rail (Rallus aquaticus), Yellowhammer (Emberiza citrinella), Arthurdendyus triangulates, Glebionis segetum, Butterfly-bush (Buddleja davidii), Himalayan Honeysuckle (Leycesteria formosa), Japanese Knotweed (Fallopia japonica), Spanish Bluebell (Hyacinthoides hispanica), Sycamore (Acer pseudoplatanus), Jenkins' Spire Snail (Potamopyrgus antipodarum), Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius), Common Porpoise (Phocoena phocoena), Grey Seal (Halichoerus grypus), Brown Long-eared Bat (Plecotus auritus), Brown Rat (Rattus norvegicus), Daubenton's Bat (Myotis daubentonii), Eurasian Badger (Meles meles), European Rabbit (Oryctolagus cuniculus), Lesser Noctule (Nyctalus leisleri), Pipistrelle (Pipistrellus pipistrellus sensu lato), Soprano Pipistrelle (Pipistrellus pygmaeus), West European Hedgehog (Erinaceus europaeus)</i></p>

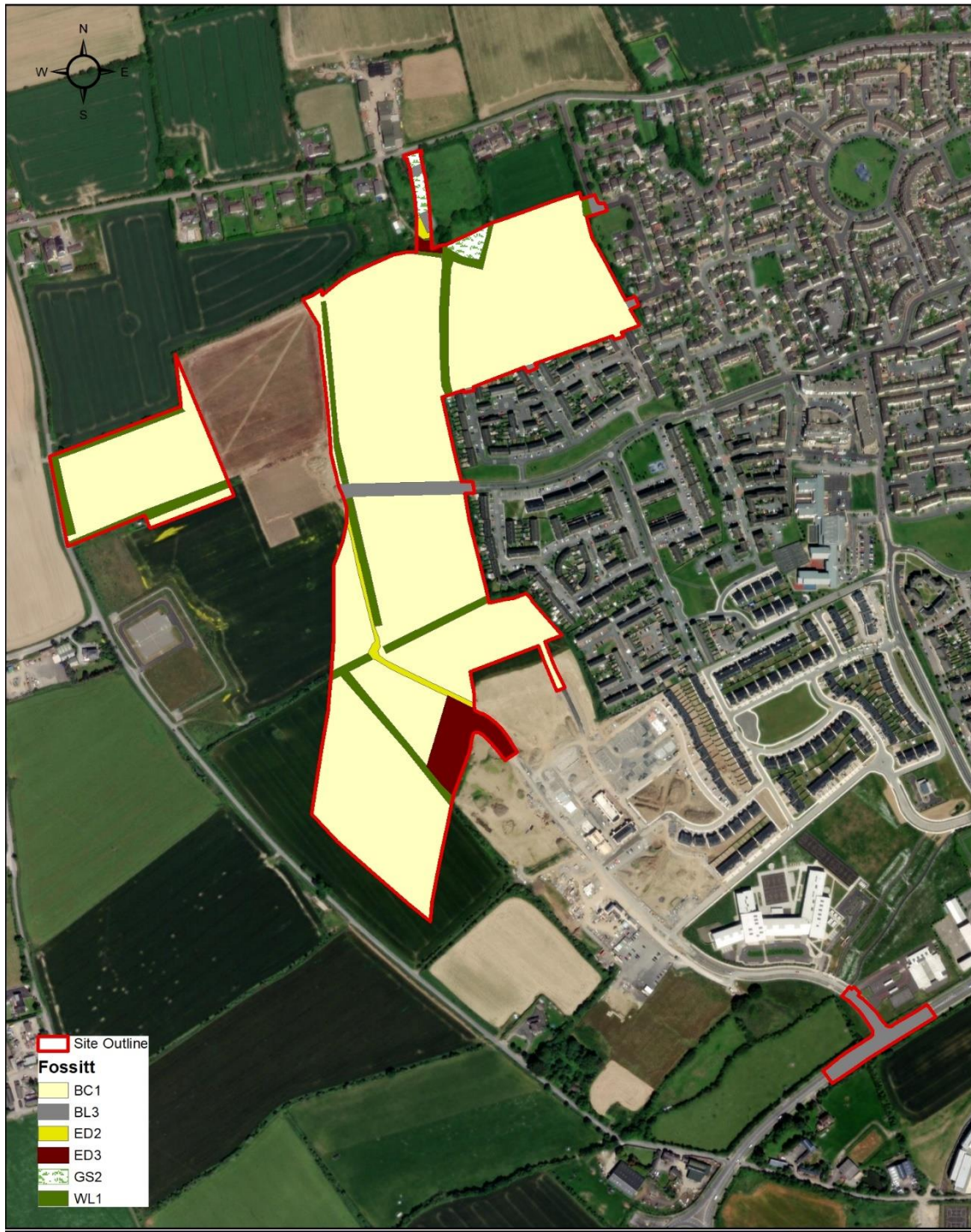
Table 5.4. Species found by NPWS proximate to the subject site

<p><i>Common Frog (Rana temporaria); Common Lizard (Lacerta vivipara); Eurasian Badger (Meles meles); Irish Hare (Lepus timidus subsp. hibernicus); Grey Seal (Halichoerus grypus); West European Hedgehog (Erinaceus europaeus)</i></p>
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No species of conservation importance have been noted on site by NPWS.

5.3.4 Site Survey

The most recent site assessments were carried out on the 12th May 2023 and 27th June 2023. Habitats within the proposed development site were classified according to Fossitt (2000) (Figure 5.10) and the species noted within each habitat are described.



Project: Balbriggan
 Location: Co. Dublin
 Date: 3rd July 2023
 Drawn By: Bryan Deegan

ALTEMAR
 Marine & Environmental Consultancy

0 60 120 240 360 480 Meters

Figure 5.10 – Fossitt Habitats on site

Arable crops BC1

Arable crops dominate the habitats. In 2023 this was dominated by a monoculture of rape (*Brassica napus*). Opportunistic flora species were present. Species noted included creeping buttercup (*Ranunculus repens*), cornflower (*Centaurea cyanus*), fat hen (*Chenopodium album*), corn marigold (*Glebionis segetum*), scarlet pimpernel (*Anagallis arvensis*), dandelion (*Taraxacum spp.*), groundsel

(*Senecio vulgaris*), docks (*Rumex spp.*), plantains (*Plantago spp.*), nettle (*Urtica dioica*), prickly sowthistle (*Sonchus asper*), pineapple weed (*Matricaria discoidea*), shepherd's purse (*Capsella bursa-pastoris*) and. No species of conservation importance were noted.



Plate 1. Arable crops BC1

ED3 Recolonising Bare Ground

As can be seen from figure 5.10 in the south west portion of the site a residential development has recently been developed. Site clearance works or ploughing have been carried out which has included part of the proposed development site. In this area previously grown crops have not been replanted and therefore consists of an area of Recolonising Bare Ground. Based upon an examination of historic satellite imagery (Google Historic Imagery) works and site clearance and spoil storage commenced in the area until 2018 with the area being fully cleared in 2019 as part of the adjacent development. This site is being recolonised by opportunistic species such as rape (*Brassica napus*), dandelion (*Taraxacum spp.*), bramble (*Rubus fruticosus agg.*), rosebay willowherb (*Chamaenerion angustifolium*), clover (*Trifolium spp.*), docks (*Rumex spp.*), thistles (*Cirsium arvense & C. vulgare*), willowherb (*Epilobium parviflorum*), pineappleweed (*Matricaria discoidea*), plantains (*Plantago spp.*), hoary daisy (*Bellis perennis*), cat's-ear (*Hypochaeris radicata*), creeping buttercup (*Ranunculus repens*), hedge bindweed (*Calystegia sepium*), common vetch (*Vicia sativa ssp. Segetalis*), corn marigold (*Glebionis segetum*).



Plate 2. ED3 Recolonising Bare Ground

GS2-Dry meadows and grassy verges

In the northern portion of the site is an area of land that was previously Improved Agricultural Grassland (GA!) and in 2019 cattle were observed grazing in this area. Cattle appeared to not have grazed the habitat for several years and the habitat had become a GS2-Dry meadows and grassy verges habitat. Species clover (*Trifolium repens*), bramble (*Rubus fruticosus*), creeping buttercup (*Ranunculus repens*), thistles (*Cirsium arvense*, *C. vulgare*), common ragwort (*Senecio jacobaea*), dandelion (*Taraxacum spp.*), docks (*Rumex spp.*), daisy (*Bellis perennis*), plantains (*Plantago spp.*), nettle (*Urtica dioica*), cat's-ear (*Hypochaeris radicata*), and hedge bindweed (*Calystegia sepium*) proximate to the hedgerows. Bramble (*Rubus fruticosus*) had begun to encroach at the edges of the habitat.



Plate 3. GS2-Dry meadows and grassy verges

WL1- Hedgerows

Hedgerows were noted within the site on the field boundaries (Plate 4 & 5). 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. The remainder of the site had more traditional hedgerows. However, the condition varied considerably from linear mature traditional hedgerow (Plate 4) to fractured hedgerow dominated by bramble (plate 5). 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*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), ivy (*Hedera helix*) and cleavers (*Galium aparine*) were noted.



Plate 4. Intact hedgerow (top). **Plate 5.** Relatively poor hedgerow with bramble.

BL3- buildings and artificial surfaces

Buildings and artificial surfaces consist of roads including a newly constructed road which traverses the site (Plate 6). A derelict house (Plate 7) and a metal barn (Plate 8) 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 6. New rosd. **Plate 7.** Derelict house



Plate 8. Metal barn with nesting barn swallows.

5.3.4.1 Evaluation of Habitats

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

Birds

The following bird species were noted onsite during Altemar surveys. It should be noted that Meadow Pipit (Red listed) were noted onsite:

Table 5.5: Bird Species noted in the vicinity of the proposed development.

Common Name	Scientific Name	BoCCI
Starling	<i>Sturnus vulgaris</i>	Amber
Great tit	<i>Parus major</i>	Green
Woodpigeon	<i>Columba palumbus</i>	Green
Goldfinch	<i>Carduelis carduelis</i>	Green
Herring Gull	<i>Larus argentatus (flying)</i>	Amber
Hooded crow	<i>Corvus cornix</i>	Green
Wren	<i>Troglodytes troglodytes</i>	Green
Blackbird	<i>Turdus merula</i>	Green
Robin	<i>Erithacus rubecula</i>	Green
Swallow	<i>Hirundo rustica (breeding)</i>	Amber
Chaffinch	<i>Fingilla coelebs</i>	Green
Dunnock	<i>Prunella modularis</i>	Green
Linnet	<i>Carduelis cannabina</i>	Amber
House Sparrow	<i>Passer domesticus</i>	Amber
Skylark	<i>Alauda arvensis</i>	Amber

Common Name	Scientific Name	BoCCI
Meadow Pipit	<i>Anthus pratensis</i>	Red

As outlined in Appendix 5.2 a wintering bird assessment was carried out. As outlined in Appendix 5.2 “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 5.2 “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.”

Common Name	Scientific Name	BoCCI
Starling	<i>Sturnus vulgaris</i>	Amber
Common Buzzard	<i>Buteo buteo</i>	Green
Woodpigeon	<i>Columba palumbus</i>	Green
Meadow Pipit	<i>Anthus pratensis</i>	Red
Pied Wagtail	<i>Motacilla alba yarelli</i>	Green
Wren	<i>Troglodytes troglodytes</i>	Green
Robin	<i>Erithacus rubecula</i>	Green
Fieldfare	<i>Turdus pilaris</i>	Green
Blackbird	<i>Turdus merula</i>	Green
Magpie	<i>Pica pica</i>	Green
Jackdaw	<i>Corvus monedula</i>	Green
Rook	<i>Corvus frugilegus</i>	Green
Raven	<i>Corvus corax</i>	Green
Starling	<i>Sturnus vulgaris</i>	Amber
Goldfinch	<i>Carduelis carduelis</i>	Green
Yellowhammer	<i>Emberiza citrinella</i>	Red

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 noted emerging from the derelict building located to the north of the site.

Amphibians/Reptiles

No pond features, marshes or watercourses are noted on site. 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.

5.4 Potential Impact 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.

5.4.1 Proposed Development

5.4.1.1 Construction Stage

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 that ultimately outfall to the Bremore Stream. In the absence of mitigation measures, there is the potential for contaminated surface water runoff to enter proximate surface water drainage networks with the potential for downstream impacts on the Bremore Stream and aquatic biodiversity. 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*) and Linnet (*Carduelis cannabina*) 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 Knock Lake pNHA (2.1 km). The nearest Natura 2000 site is River Nanny Estuary and Shore SPA (3.7 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 network at the Balbriggan / Skerries Wastewater Treatment Plant. After consultation with Martin Peters Associates 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, which in turn outfalls to the Bremore Stream and, ultimately, the marine environment. However, given the minimum distance from the proposed development site to the nearest conservation site along this indirect pathway (3.7 km River Nanny Estuary and Shore SPA), the scale of the proposed development, and the fact that surface water drainage will be directed to an existing public surface water network, any pollutants, dust or silt laden run off will be dispersed, diluted, and ultimately settle within the surface water drainage network and Bremore Stream. In the absence of mitigation, any silt or pollutants that may enter this surface water network will settle, be dispersed or diluted along the network.

Potential Impacts in the absence of mitigation: Negligible / International / Neutral Impact / Not significant / Long-term. Mitigation is not required.

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 protected terrestrial mammals were noted on site. Loss of habitat and habitat fragmentation may affect some common mammalian species.

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. Mitigation has been included in the design which included retention of perimeter hedgerows, replanting and the generation of a additional perimeter hedgerows around the housing development. In addition, additional native hedgerows are to be planted within open spaces/play areas and as between properties (front gardens).

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 for an inspection of the building on site prior to demolition.

Aquatic Biodiversity

Due to the lack of any watercourse or drainage ditch within the site boundary, and the lack of direct hydrological pathway to a watercourse, there is little potential for significant downstream impacts on biodiversity from silt or petrochemicals. However, there is potential for silt and pollution to enter the existing public surface water drainage network on adjacent roads during construction, and once the drainage is connected to existing surface water infrastructure there is potential for downstream effects.

Impacts: Low adverse / local / Negative Impact / Slight Effects / short term. Mitigation is needed in the form of control of silt, surface water and petrochemical and dust during construction to prevent impacts on local biodiversity. However, these measures are not necessary for the protection of European/Natura 2000 sites.

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 areas that are currently being used by 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 immediately to the north of the site and these extend to the Gormanstown and the displacement of yellowhammer and meadow pipit would be off the site but they would be expected to remain locally. 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.

5.4.1.2 Operational Stage

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

The proposed Project will comply with drainage requirements and the Water Pollution Acts. Standard compliance mitigation measures will be in place to prevent downstream impacts. No significant impacts on designated sites are likely during operation.

Impacts: Negligible / International / Neutral Impact / Not significant / long term.

Biodiversity

Biodiversity value of the site will improve as landscaping matures.

Terrestrial mammalian species

No protected mammals were noted onsite.

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. This will include 994 linear metres of native hedgerow and 829 trees.

Impacts: Low adverse-Neutral / site / Negative-neutral Impact / 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 discussions took place with Sabre and the lighting in residential areas is set to 2700°K (in compliance with bat lighting guidelines). However, spine roads on site are set to 4000°K (in line with exist road lighting). 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 a substantial portion of 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 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.

5.4.1.3 Do-Noting Impact

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

5.4.2 Cumulative

Cumulative Impacts can be defined as “*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and proposed developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the Proposed Development.

Table 5.5a & 5.5b detail the existing, proposed and granted planning permissions on record in the area:

5.4.2.1 Construction Stage

Table 5.5a. Potential Cumulative Impacts (Construction Stage)

Planning Ref. No.	Address	Summary of Development
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' & 'Flemingtown Balbriggan, Co. Dublin	<p>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:</p> <p>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;</p> <p>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;</p> <p>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];</p> <p>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</p>

Planning Ref. No.	Address	Summary of Development
		<p>vehicular and pedestrian connections to the 'Boulevard Road' and all associated landscaping and ancillary site development works;</p> <p>F) Signalised upgrade of the junction of Boulevard Road and the Clonard Road (R122) as well as pedestrian crossings along Boulevard Road;</p>
F22A/0526	Phase 3 to be known as 'Ladywell' within the townlands of Clonard or Folkstown Great, Clogheder & Flemington, Balbriggan, Co. Dublin	<p>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, Clogheder & 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;</p>

Planning Ref. No.	Address	Summary of Development
F22A/0195	Flemington Lane, Bremore, Balbriggan, Co. Dublin, K32 RX37.	Demolish existing detached garage and single storey extension to rear of dwelling, construct new single storey extensions to side and rear, new detached garage, modify fenestration and entrance door arrangement to front elevation, relocate existing vehicular entrance, SuDS drainage and all associated site works.
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 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;

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 in combination effects on biodiversity, 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.

5.4.2.2 Operational Stage

Table 5.5b. Potential Cumulative Impacts (Operational Stage)

Planning Ref. No.	Address	Summary of Development
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' & 'Flemington Balbriggan, Co. Dublin	<p>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:</p> <p>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;</p> <p>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;</p> <p>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];</p> <p>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;</p>

Planning Ref. No.	Address	Summary of Development
		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, Clogheder & 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, Clogheder & 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;
F22A/0195	Flemington Lane, Bremore, Balbriggan, Co. Dublin, K32 RX37.	Demolish existing detached garage and single storey extension to rear of dwelling, construct new single storey extensions to side and rear, new detached garage, modify fenestration and entrance door arrangement to front elevation, relocate existing

Planning Ref. No.	Address	Summary of Development
		vehicular entrance, SuDS drainage and all associated site works.
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 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;

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 in combination effects on biodiversity, 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.

5.5 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

5.5.1 Proposed Development

5.5.1.1 Construction Stage

- A project ecologist will be appointed to oversee all works.
- Onsite drains 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.
- Stockpiling of loose materials will be kept to a minimum of 40m from drains.
- 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, 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.

5.5.1.2 Operational Stage

- 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 apartments 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. Upon moving in, residents within the apartment blocks in the vicinity of the apartments will be provided with an information pack in relation to the sensitivities of the swallows.

5.5.2 Cumulative

5.5.2.1 Construction Stage

No mitigation is required in relation to cumulative impact during construction.

5.5.2.2 Operational Stage

No mitigation is required in relation to cumulative impact during construction.

5.6 Residual Impact of the Proposed Development

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the design and the application of construction and operational phase controls. The overall impact on the ecology of the proposed development will result in a low adverse / Negative/ site/ not significant / long term impact on the ecology of the area and locality overall. This is primarily as a result of the loss of terrestrial habitats including arable land and hedgerows on site, supported by the creation of additional biodiversity features, standard construction, mitigation in relation to nesting birds, and operational controls and a sensitive native landscaping strategy.

5.7 Monitoring

5.7.1 Proposed Development

5.7.1.1 Construction Stage

A project ecologist will oversee works on site.

5.7.1.2 Operational Stage

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

5.8 Difficulties Encountered

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

5.9 References

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23. NPWS (2013) Conservation Objectives: Rogerstown Estuary SAC 000208. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
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6.0 LAND & SOILS

6.1 Introduction

This chapter provides a description of the existing land and soil environment within the study area comprising the proposed development and its immediate surroundings. This chapter also describes and assesses the likely impacts on these elements associated with both the construction and operational phases of the proposed development.

Potential impacts of the proposed development are identified, and the residual impacts are described following the adoption of mitigation measures. This chapter follows the assessment methodology used as per the Guidelines on the Information to be contained in Environmental Impact Assessment Reports 2022,

This section has been prepared by IE Consulting Ltd, which is a water, environmental and civil engineering consultancy established in 2001. IE Consulting provide specialist services in hydrogeology and environmental geology.

This chapter has been prepared by Jacqueline McHugh CEng, CEnv MCIWEM on behalf of IE Consulting. She graduated from the University of Abertay, Dundee 2001 with a Masters in Environmental Management and Urban Drainage, previously having completed a Bachelor of Science Degree in Environmental Technology in 2000 and a Higher National Certificate in Civil Engineering in 1995. Jacqueline has over twenty years of experience in the planning and development consultancy in both the UK and Republic of Ireland. Her project experience includes large scale housing developments, motorway schemes, waste disposal sites and power stations.

The Land & Soil Chapter has been reviewed by Mr. Jer Keohane, a director with IE Consulting, who has over 38 years' experience in consulting and whose qualifications include a B.Sc Degree in Geology, Master's Degree in Water Resource Engineering and CGeol FCIWEM MIEI.

6.1.1 Study Area – Development Area

The location of the development area is shown in **Figure 6.1**. The masterplan drawing is presented in **Appendix 6.1** and shows the extent of the development. For the purposes of the full and thorough assessment of the development the study area is extended by a radius of approximately 2km. This is based upon IGI guidelines.



Figure 6.1 Approximate Outline of Proposed Development Site

6.2 Research Methodology

6.2.1 Land & Soil

This assessment has been carried out with due reference to the principles set out in the following documents;

EPA, Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022; and

IGI, Guidelines for the Preparation of Soils, Geology and hydrogeology Chapters of Environmental Impact Statements 2013.

Data used in the baseline study for land and soil was collated from the following publicly available sources;

- Aerial photography from Google maps;
- Geological Heritage Areas, GSI Spatial Viewer;
- Geological Survey of Ireland Maps Database – GSI Spatial Viewer (www.gsi.ie);
- Groundwater Quality Status Maps (Watermaps.wfdireland.ie);
- Historic Maps from the Ordnance Survey of Ireland (www.osi.maps.argis.com);
- Integrated Pollution Control (IPC) and Industrial Emissions (IE) Licences, EPA (gis.epa.ie)
- Protected areas, Biodiversity Ireland (maps.biodiversityireland.ie);
- National Waste Collection Permit Office website, <https://www.nwcpo.ie/>,
- Previous EIA statements carried out under Crescent Park Planning Applications F08A/1329 and F07A/1249;
- Site reconnaissance visit carried out on the 19th March 2019;
- Teagasc Subsoils Mapping- GSI Spatial Viewer (www.gsi.ie);
- <https://geohive.ie> website;
- Irish EPA Mapping Portal;
- IGSL Site Investigation Report No. 22009, October 2019; and
- Licensing & Permitting, EPA (www.epa.ie)

6.2.1 Assessment Methodology

When considering the potential impact, the significance of any effects is generally understood to mean the relative importance of the outcome of the effects (the consequences of the change). Significance is determined by a combination of (objective) scientific and subjective (social) concerns. Effects are assessed on the following basis;

- quality (i.e. positive, negative or neutral),
- significance (imperceptible, slight, moderate, significant or profound),
- duration (short term, medium term, long term, permanent or temporary),
- extent and
- context.

In the collation of information to describe effects, reference has been made to the criteria set out in Table 3-4 Checklist for Information Required to Describe Effects as set out in the EPA document – Guidelines on the Information to be contained in Environmental Impact Assessment Report 2022.

Assessment should also take consideration of interactive effects, where there may be interactions between environmental factors that could lead to impacts e.g. deterioration of surface water quality in an areas due to site clearance and soil run-off. Finally cumulative impacts should be considered where the addition of many minor or significant effects, including those of neighbouring projects to create larger more significant effects.

This document outlines a thirteen step methodology as per the Guidelines for the preparation of Soils, Geology and hydrogeology Chapters of Environmental Impact Statements, IGI 2013, which has four distinct elements as follows;

- Initial Assessment (Steps 1 – 5);
- Direct & Indirect Site Investigation and Studies (Steps 6 – 9);
- Mitigation Measures, Residual Impacts and Final Impacts Assessment (Steps 10 – 12); and
- Completion of Soils and Geological (Land & Soil) Sections of EIAR. (Step 13).

The initial assessment as outlined in section 6.3 describes the existing land and soil environment and presents a description of the past and present uses of the site and other neighbouring sites.

This section also describes the nature of the site based on both site specific and neighbouring site investigation data from publicly available sources where available.

The conceptual site model is the result of the examination of all available site data and this is briefly outlined in Section 6.6.2.

Section 6.6 lists the predicted impacts associated with the development of the site. The magnitude of the potential impact is ranked in accordance with the IGI Guidelines and this allows the significance of the impact to be determined.

Following the assessment of the impacts, specific mitigation measures have been developed to avoid, reduce and if possible remedy any negative impacts on the land soil and water. These are described in section 6.7.

Residual impacts are described in section 6.8. The magnitude and significance of these residual impacts have also been classified in accordance with the IGI Guidelines.

6.3 Receiving Environment

6.3.1 Site Location and Setting

The proposed development is located northwest of Balbriggan in the townland of Clonard or Folkstown Great. It lies approximately 1.2 km to the east of the M1 motorway. Flemington Lane with detached dwellings lies to the North of the site. To the north east, east and southeast of the site are more substantial residential developments. The south of the site is bounded by agricultural land zoned for development. There is construction also happening in the area as Taylors Hill Phase 2 has commenced to the southeast.

The west of the site is bounded by Bridgefoot Road, L1130 with intermittent hedgerow. Along this boundary to the northeast of the proposed development is the Balbriggan Water Supply Scheme Reservoir.

A school named Colaiste Ghlor na Mara is approximately 350m to the Southeast of the site facing onto the road referred to as "Boulevard Road which links to the R122 Road. To the east are residential developments.

There is construction also happening in the area, such as Taylors Hill-Phase 2, which commenced March 2019. Approximately 250m to the west of the proposed development is the completed Balbriggan Water Supply Reservoir.

To the Southeast on Bridgefoot Road and along this road is a pre-school called Helgas.

Figure 6.1 shows the approximate outline of the site for the proposed residential development. The development site area is 22.62ha (55.9 acres); (including Residential Site Area: 19.28ha (47.6 acres) & Class 1 Open Space - 2.8667ha (7.1 acres).

6.3.2 Topography & Land Use

The site is slightly dome shaped. It slopes from Flemington Lane to the south of the site. It rises very gradually up from Bridgefoot Road. There is a steep rise from the existing residential development to the east to the centre of the site. This forms a local ridgeline and forms a viewing setting to the town of Balbriggan. The site ranges in height from 30mAOD to 70mAOD.

The site is currently in agricultural use and most fields during the site reconnaissance visit (March 2019) were sown with arable crops. To the east of the proposed development is residential/urban land-use. To the north and west is rural with the south being developed for infrastructure – distributor roads and schools.

6.3.3 Surface Water Features

Clonard Brook is shown to run from west to east in the south of the site in the EPA mapping. It is the closest open surface water to the site, not on the site but approximately 600m to the southeast of the site, it is referred to as (Clonard Brook) or Clonard Folkstown Great, EPA Code 08C27 from Boulevard Road.

This stream was not located during the site reconnaissance visit although it was subsequently located during the site investigation and a water sample recovered and analysed at a laboratory. The Clonard Brook is located to the south of the site and is shown to run from west to east in the EPA mapping. Refer to **Figure 6.2** below. It is the closest surface water feature to the site, not on the site but approximately 600m to the southeast of the site. It is referred to as (Clonard Brook) or Clonard Folkstown Great, EPA Code 08C27 from Boulevard Road heading east. The EPA mapping shows that the source of this watercourse as a spring to the east of Clonard-Bridgefoot Road, this is now mapped by the GSI as a historic spring see below, Clonard brook is now fed from the west by a series of agricultural drainage ditches.

Another historic spring is located along Flemington Road (not on the site) and will be discussed in the Hydrogeology section.

The Clonard Brook discharges to the coast just north of Tankardstown Lifeboat House and Martello Tower. Its course is a southeast to northeast flow.

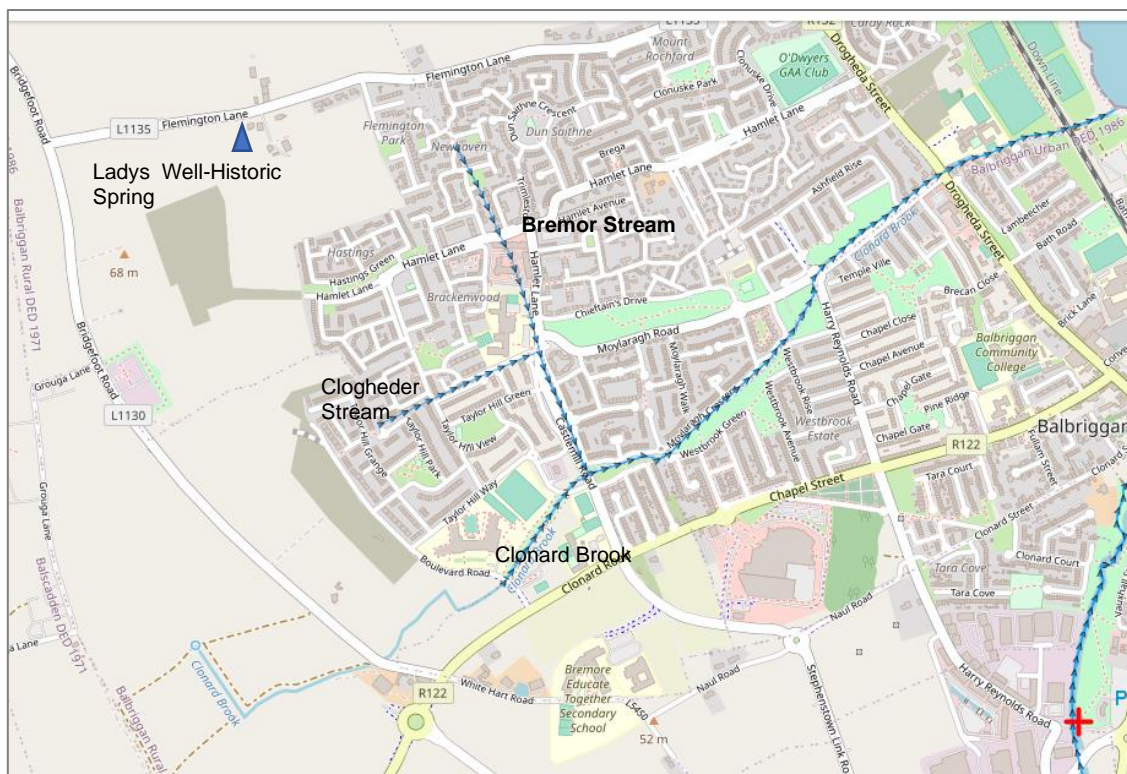


Figure 6.2 Location of Nearby Surface Water Features and Springs

Other surface water features identified on EPA mapping off-site were as follows;

- approximately 220m to the east, Clogheder, EPA Code 08C26, flowing east west and culverted under Martello Close/Martello View- meets the Bremore

- approximately 630 to the east, Bremore/Matt, EPA Code 08B41, flowing north/south and then east. It is culverted under the shopping centre “Dunnes Stores” to the east and towards Moylaragh Mews,
- approximately 1.76km to the south, “unidentified by name” EPA Code 08M01, flowing to the southeast to northeast, where it meets “Stephensontown 08 (EPA Name),
- approximately 2.3km to east, Northwest Irish Sea Balbriggan Front Strand Beach, and
- approximately 1.34 km to the northwest, Gormanstown, EPA Code 08G14, flowing to the northeast –tributary of the River Delvin which is greater than 2km to the north.

6.3.4 Historic Setting of the Site

A review of the OSI historic on-line mapping provided the following information on the development site, as per **Table 6.1** below.

Source	Description of Site	Description of Site Surrounds
6" Cassini 1830 -1930	Undeveloped agricultural fields	Farmstead to the north along Flemington Lane with a holy well denoted to the south of this. Bridgefoot Road present to the west.
Historic 6" Black & White 1837 -42	No change	Quarry noted to the southwest of the site along western boundary of Clonard - Bridgefoot Road and a second smaller quarry noted further up the road to the north on the same side.
Historic Map 25" 1888 - 1913	No change	The second smaller quarry no longer noted on the map- possibly infilled.
Aerial Photography 1995	No change	Increase in the number of single dwellings developments along Flemington Lane and substantial residential estate development to the northwest of the site referred to as Flemington Park. No evidence remaining of quarry.
Aerial Photography 2000	No change	No change
Aerial Photography 2005	No change	No change
Aerial Photography 2005 – 2012	No change	Substantial residential development to the east as Balbriggan town now has infilled to current proposed site boundary.

Table 6.1 Historic Land Use at Site and Surrounds

6.4 Land and Soil Baseline Environment

6.4.1 Regional Soil and Subsoil

Teagasc characterises the subsoils beneath the entire site as Till derived chiefly from Lower Paleozoic rocks. An extract from the GSI mapping is presented in **Figure 6.3** below.

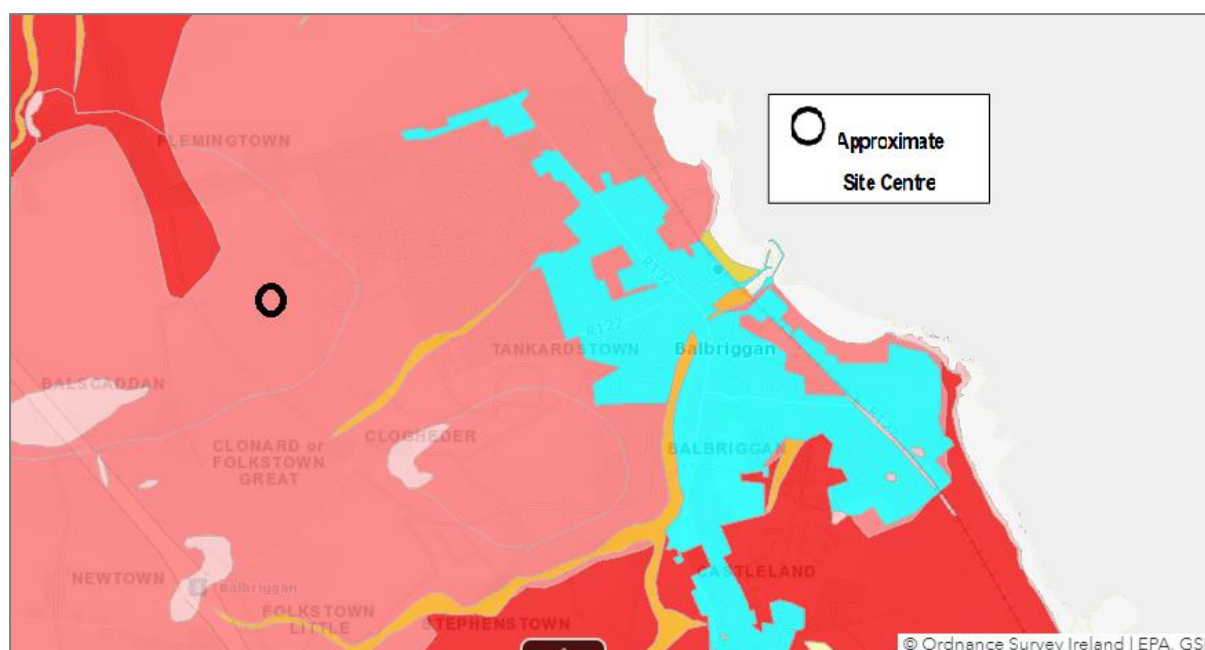


Figure 6.3 Extract from Teagasc Soils GSI Website

Ground instabilities affect parts of Co. Dublin and the Geological Survey of Ireland has developed a map, and report which shows and describes areas of potential or observed ground instabilities as part of the FP7 PanGeo project. Geological Survey of Ireland datasets along with Ordnance Survey of Ireland mapping, PSI datasets and limited field validation were used to develop this interpretation.

The Pan Geo Dublin Stability Project defines an area of potential natural ground movement to the northeast of the site adjacent to the north of Flemington Lane in the form of compressible ground. No further information was provided. It is likely that when a load is applied to the compressible quaternary geological deposits in this identified area that instability in the form of compression occurs causing differential settlement of structure and failure in the form of cracking. This does not affect the development site, but as a precaution under the principles of Euro Code 7 compression of the ground will be factored into any foundation design as standard.

6.4.2 Regional Bedrock Geology

The GSI Spatial Resources Viewer website's 1: 100,000 Scale Solid Geology Map Series characterises the site as being underlain by the Belcamp Formation (BP) which is described as a collection of volcanic type rocks such as andesite, pillow breccia, mudstone and tuff to an approximate thickness 1600m. An extract from the GSI mapping is presented in **Figure 6.4** below.

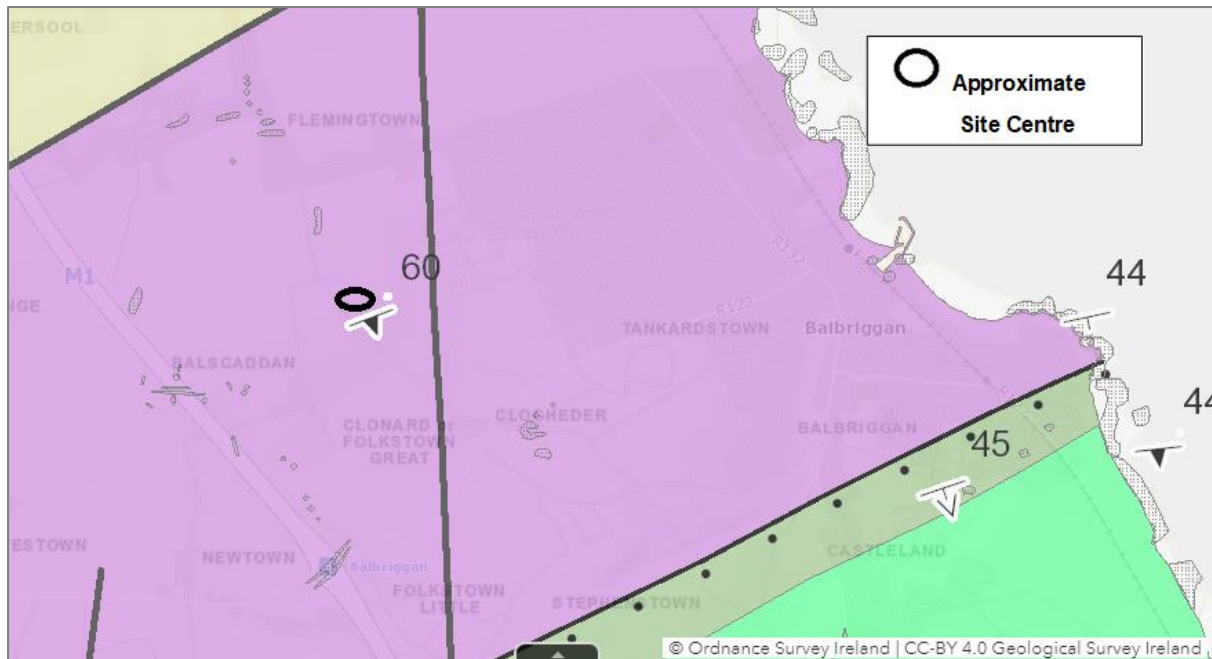


Figure 6.4 Extract from 1:100,000 Scale Solid Bedrock Geology, GSI website

This mapping indicates that there is a discrete area of bedrock outcropping along the Bridgefoot Road to the northwest of the site. This was not identified during the site walkover.

There is a fault trending northeast to southwest from Flemington Lane and dissecting Bridgefoot Road to the south of the site.

There are no areas of karst defined on the mapping.

6.4.3 Economic Geology

The GSI Spatial Resources Viewer identifies no active quarries, mineral localities or borehole locations verified or unverified on site or within 1km. The nearest mineral location identified in townland of Tankardstown, mineral reference location 3,267.00, approximately 2km to the east of the site. This is defined as a brickfield identified on OSI historic 6" Mapping Series.

No karst features were identified on site which is consistent with the type of solid geology identified.

Further along the coast line to the south is also noted in the townland of Balbriggan, mineral reference location 5,327.00. This is defined as iron pyrites in greenstone and grits in the OSI historic 6" Mapping Series. This is likely associated with the Balbriggan Formation (BF) described as mudstone and sandstone.

The Corine database held under EPA Mapping states that the site is characterised by agricultural land code 211, described as arable agricultural non-irrigated land.

The site is in an area where the EPA has defined that greater than 20% of homes are above radon reference levels. Buildings in this area will require radon protection measures. A site investigation carried out in 2019 encountered ground conditions as detailed in the site conceptual model outlined in **Figure 6.8**.

6.4.4 Contaminated Land

The National Waste Collection Office (NWCPO) issue waste collection permits for all waste management regions in Ireland. According to EPA Mapping there are no waste licensed IPC facilities on the proposed site.

The nearest licensed site is approximately 2km to the southeast. It is referred to as P1014-01, Pacon Waste & Recycling Ltd. No details are provided of issue to renewal date. EPA mapping identifies no waste site boundaries on or near the site and no waste facility with the exception of the IPC licensed facility already mentioned.

The likelihood of contaminated land being present at the site is low as it has been in agricultural use for the last 100 years of public records.

The off-site quarry's shown on historic mapping in the 19th century could potentially be deemed as off-site sources of contaminants if found to be infilled with waste. These are now currently located within agricultural land. The 2019 site investigation carried out soil, surface water and ground water environmental assessment and found that there were no soil contaminants at concentrations that would pose a risk to human or ground/surface waters.

6.4.5 Summary of Features of Importance

The main features of importance uncovered on the proposed development site are summarised in **Table 6.2** below.

Feature	Importance	Criteria/Justification
Soil	Low – Medium	The soil is classified as low permeability by the GSI, however as it is currently in use of arable land there will be considerable quantities of good quality topsoil.
Geology	Medium – High	(NRA Table C2 Criteria for Rating Site Importance of Geological Features (NRA, 2008) – well drained fertile soils

Table 6.2 Summary of Features of Importance

6.4.8 Classification of the Environment

The generic type of geological environment of the proposed development site can be determined based on IGI guidelines. The generic types of geological/hydrogeological environments include;

- Type A** – Passive geological/hydrogeological environments e.g. areas of thick low permeability subsoil, areas underlain by poor aquifers, recharge areas, historically stable geological environments,
- Type B** – Naturally dynamic hydrogeological environments e.g. groundwater discharge areas, areas underlain by regionally important aquifers, nearby spring rises, areas underlain by permeable soils,
- Type C** – Man-made dynamic hydrogeological environments e.g. nearby groundwater abstractions, nearby quarrying or mining activities below the water table, nearby waste water discharges to ground, nearby geothermal systems,
- Type D** – Sensitive geological/hydrogeological environments e.g. potentially unstable geological environments, groundwater source protection zones, karst, and
- Type E** – Groundwater dependent eco-systems e.g. wetlands, nearby rivers with a high groundwater component base of flow.

The proposed development site is a “Type A” as it is a passive geological/hydrogeological environment in which low permeability subsoil overlies a locally important aquifer.

6.5 Characteristics of the Proposed Development

6.5.1 Construction Operations

The proposed development will involve the following construction operations which have the potential to impact the geological and hydrogeological features of importance;

- Excavation during construction to reduced level to form service routes, roads, housing and SUDs features. It is unlikely based on the 2019 site investigation observations that the excavations will encounter contaminated material, and therefore, the risk is considered negligible due to current and historic use of site as agricultural land;
- Storage of topsoil and subsoil stockpiles during the construction phase. At this stage it is expected that the material balance for the site will be neutral with no import of topsoil or export of subsoils, except for unsuitable materials. The design is aiming to maintain current site levels as much as is practical.

The preliminary design includes some small scale retaining walls and embankments. The following assessments are required by Figure 2 Activities/Environment Matrix of the IGI Guidelines with respect to a “Type A” site;

- Earthworks,
- Excavation of materials above the water table, and
- Excavation of material below the water table (possibly required for water main excavation).

Table 6.3 outlines the investigation required by the IGI Guidelines for a “Type A” environment which should be undertaken on the proposed development site.

Work required under activity and environment type class “A” (based on IGI Guidelines)	Details of works completed on the site at the time of writing this report
Earthworks: invasive site works to characterise nature and thickness of soil and subsoil	4No. Boreholes (1.2m – 4.90m depth range) and 17No. trial pits (depth range 1.5m – 3.5m) excavated to characterise soils. Ground model is topsoil overlying glacial tills.
Excavation of materials above the water table: Site works to characterise nature, thickness, permeability and stratification of soils and subsoils. Site works to fully characterise the bedrock geology and in order to define the resource volume/weight according to The PERC Reporting Standard. Works to determine groundwater level, flow direction and gradient; e.g. monitoring in stand pipes, piezometers, or boreholes.	4No percolation tests in accordance with BRE Digest 365. Results ranged from 2.8 to 8.5 X10 ⁻⁵ m/min. Groundwater flow direction assumed to the east. Groundwater readings as per Table 6.4 below. Locations generally dry, but perched groundwater deemed to be between one and three metres depth. Possible weathered bedrock encountered in trial pits. No bedrock encountered in boreholes, therefore no assessment done in accordance with PERC Reporting Standard.

Table 6.3 Assessment Works Required for a “Type A” Environment

6.5.2 Operational Phase

The proposed development will consist of the following:

- The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*
- The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35*

no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:

- (a) Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).
- (b) Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.
- (c) Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes) and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).
- (d) Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8 no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.
- (e) Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments (6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).
- (iv) the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the

north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.

- (v) the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.
- (vi) a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.

6.6 Potential Impact of the Proposed Development

This section assesses the potential risks to the environment from the proposed development and deals with the impacts associated with it before mitigation measures are applied.

Both direct and indirect impacts will be considered for the construction and operation phases. These will be assessed as outlined in section 6.2.

6.6.1 Preliminary Risk Assessment

The risk assessment methodology is based upon the Source- Pathway-Receptor model and requires a linkage between all three factors. The data collected relates to the receiving environment, i.e. environmental analysis of soils present on site prior to development. The risk assessment however assesses the results of the analysis against future rather than current land use. It is possible for soil contaminant concentration levels to pose a risk to receptors when the land is used for one scenario e.g. residential with gardens but the same soil concentrations may not pose a risk for a less sensitive land use, e.g. car parking.

6.6.1.1 Potential Sources of Contaminants

The site is currently a greenfield site and the proposed site use is to be residential with plant uptake, i.e. private gardens. Some dwellings will be apartments so they would classify as residential with no plant uptake.

The desk study did not identify any existing potential sources of contamination on site. The desk study reviewed historical mapping, included a site walkover, review of EPA mapping to identify nearby waste management sites. This information is presented in the preceding sections. One potential off site source was identified comprising a quarry to the west of the site. Another off-site source is Clonard Bridgefoot Road.

There is potential for hydrocarbon impact on surface water run-off which could enter soils and surface waters on site if the road drainage was inadequate and without petrol interceptors. For this reason the presence of petrol, diesel and other fuel sources was investigated by analysis of soils and groundwater.

Another potential source would be naturally occurring sulphates and chlorides that could damage future concrete foundations. This has not been considered further in this chapter but the information is available for the design Engineers to assess at the concrete design stage.

Potential Pathways

The principal pathways considered are the migration of contaminants within dust and subsequent inhalation, ingestion or dermal contact and the migration of contaminants with sub surface infiltration and shallow groundwater flow beneath the site.

Potential Receptors

The receptors considered are human health, ecology and surface and groundwater and soil quality.

6.6.2 Refined Risk Assessment and Conceptual Site Model

The site investigation comprised the excavation of 17No. trial pits to a maximum depth of 3.50m bgl and 4No. boreholes to a maximum depth of 4.90m bgl. Soil samples were recovered for environmental laboratory analysis. **Figure 6.5** shows the exploratory hole location plan for the site.

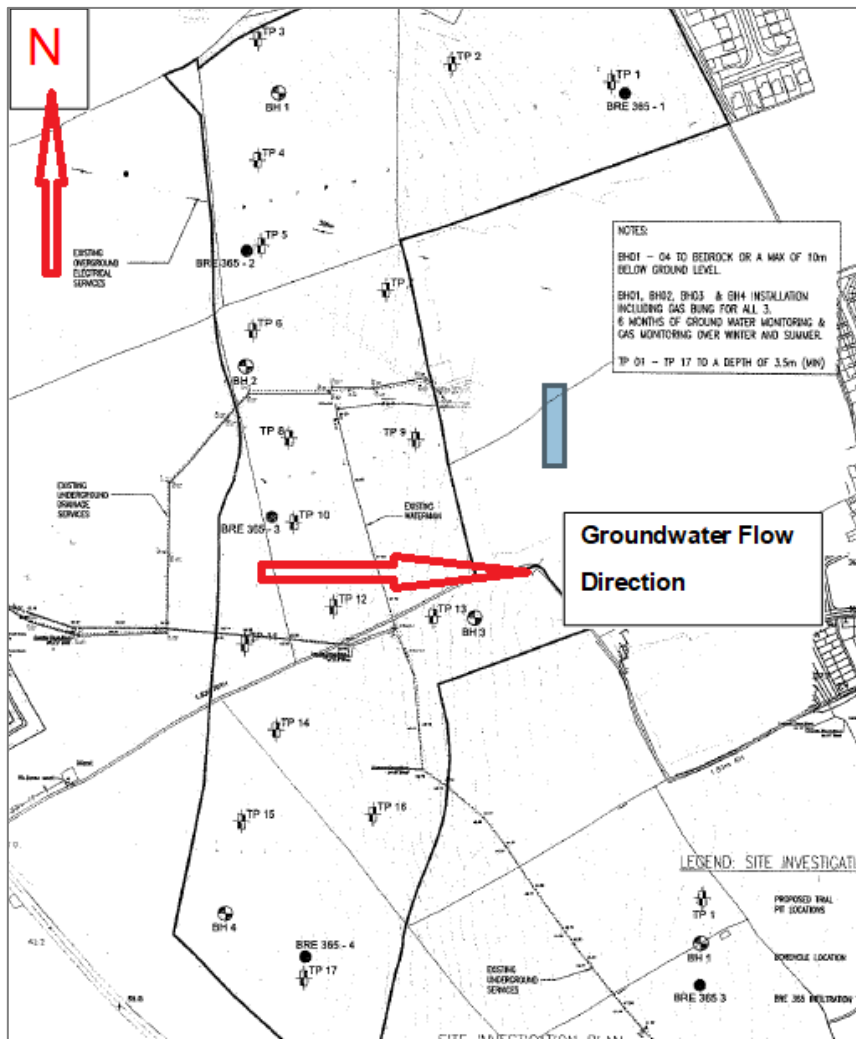


Figure 6.5 IGSL 2019 Site Investigation Exploratory Hole Location Plan

Groundwater monitoring installations were constructed at three borehole locations and monitoring took place between September and December 2019. The results are presented in Table 6.2 below.

	Date of Reading				
	04.09.2019	20.09.2019	22.10.2019	27.11.2019	13.01.2020
BH01	Dry	Dry	Dry	Dry	Dry
BH02A	Dry	Dry	Dry	2.20m	2.70m
BH03A	***	***	***	***	***
BH04	1.95m	Dry	Dry	1.05m	1.40m

Table 6.4 Groundwater Level Monitoring in Boreholes

The groundwater level readings ranged from dry to 2.70m bgl. The boreholes were positioned to allow triangulation and assessment of groundwater direction flow. As can be observed from the results above it was not possible to recover readings consistently from three boreholes to allow the triangulation of groundwater levels. For this reason the GSI's Groundwater Data Viewer was used to determine direction of flow. **Figure 6.6** below shows that groundwater direction is towards the east as expected. The red arrow depicts the flow of the groundwater.

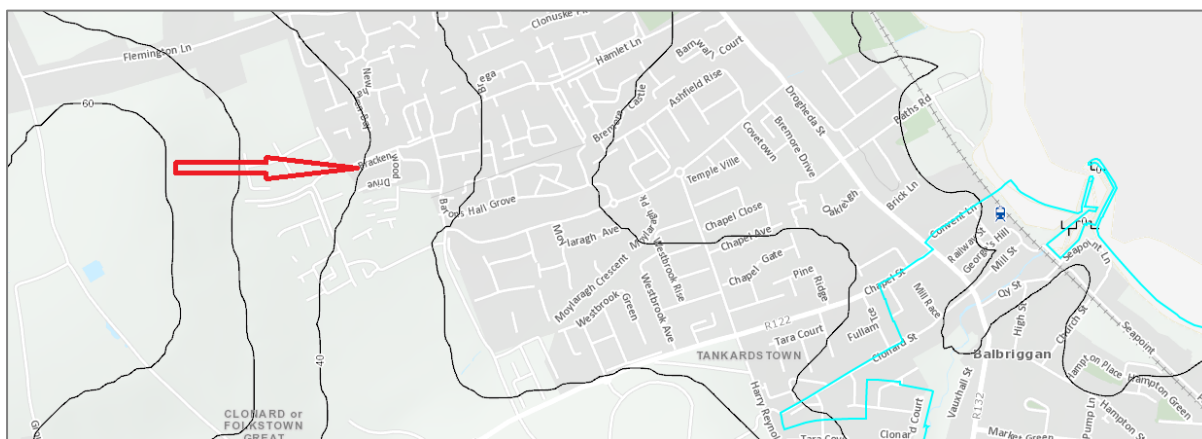


Figure 6.6 EPA Groundwater Data Viewer Groundwater Contour Mapping

In addition two groundwater samples were recovered in November 2019 from boreholes BH02A and BH04 and sent to Chemtest laboratory in the UK for analysis.

A surface water sample was recovered from Clonard Brook downstream of the site in October 2019. The location of the sample point was off site and downstream. Figure 6.7 shows the location of the surface water sample.



Figure 6.7 Location of Surface Water Sample

The ground model defined as a result of the investigation is depicted in the Conceptual Site model Figure 6.8.

6.6.2.1 Soils

Discrete quantities of Made Ground were encountered in service trenches i.e. TP11. This is not represented in the CSM figure.

Full details of analysis results can be obtained from the IGSL Site Investigation Report which is included as **Appendix 6.2** accompanying this Chapter. In summary the soil samples were analysed for a range of metals, pH, sulphates, polycyclic aromatic hydrocarbons (PAH), Total Petroleum hydrocarbons Criteria Working Group, benzene, toluene, ethylbenzene and xylene (BTEX) and Methyl tert-butyl ether (MTBE), Polychlorinated biphenyls, asbestos, waste acceptance criteria and phenols.

Generally the soil results were at or below the limit of detection for most parameters. In this instance these laboratory detection limits are significantly below any concentration that would cause harm to a receptor.

In summary this means that the soils are not impacted with hydrocarbons from road run-off or other sources. There is no evidence of historic fly tipping on site – usually identified by high metal or PAH concentrations, especially if waste was burnt or ash deposited.

The soils can be classified as inert for the purposes of waste disposal if required, although reuse should be considered on the site, or consideration should be given to a by-product designation for transfer of soils to another site, i.e. Article 27.

6.6.2.3 Groundwater

The groundwater analysis demonstrates that hydrocarbons and polycyclic aromatic hydrocarbons (PAH) (resulting from partially burnt materials-ash) are at or below laboratory method detection levels.

Electrical conductivity was below the EPA standard derived from the EU Drinking Water Standards. Elevated manganese concentrations at borehole, BH04 are likely a background concentration influenced by the regional geology. pH was 8.6 and 8.3 units of pH. The baseline groundwater conditions demonstrate groundwater is of reasonably good quality. Groundwater quality is addressed in more detail in Chapter 7.0 of this report.

6.6.2.4 Surface water

The surface water analysis of the drainage ditch feeding the Clonard Brook taken at a location downstream from the development site again showed that hydrocarbon and PAH contaminants were not an issue. Generally metals were at or below the detection limits. The pH measurement was 7.7 units of pH which is within EPA permitted range. The date of sampling was not provided to the laboratory so it cannot be confirmed if all analysis was within the set testing time as per the laboratory's quality assurance system. Surface water quality is addressed in more detail in Chapter 7.0 of this report.

In summary currently groundwater, surface water and soils at the site are not impacted with contaminants from any of the sources identified in section 6.6.1.

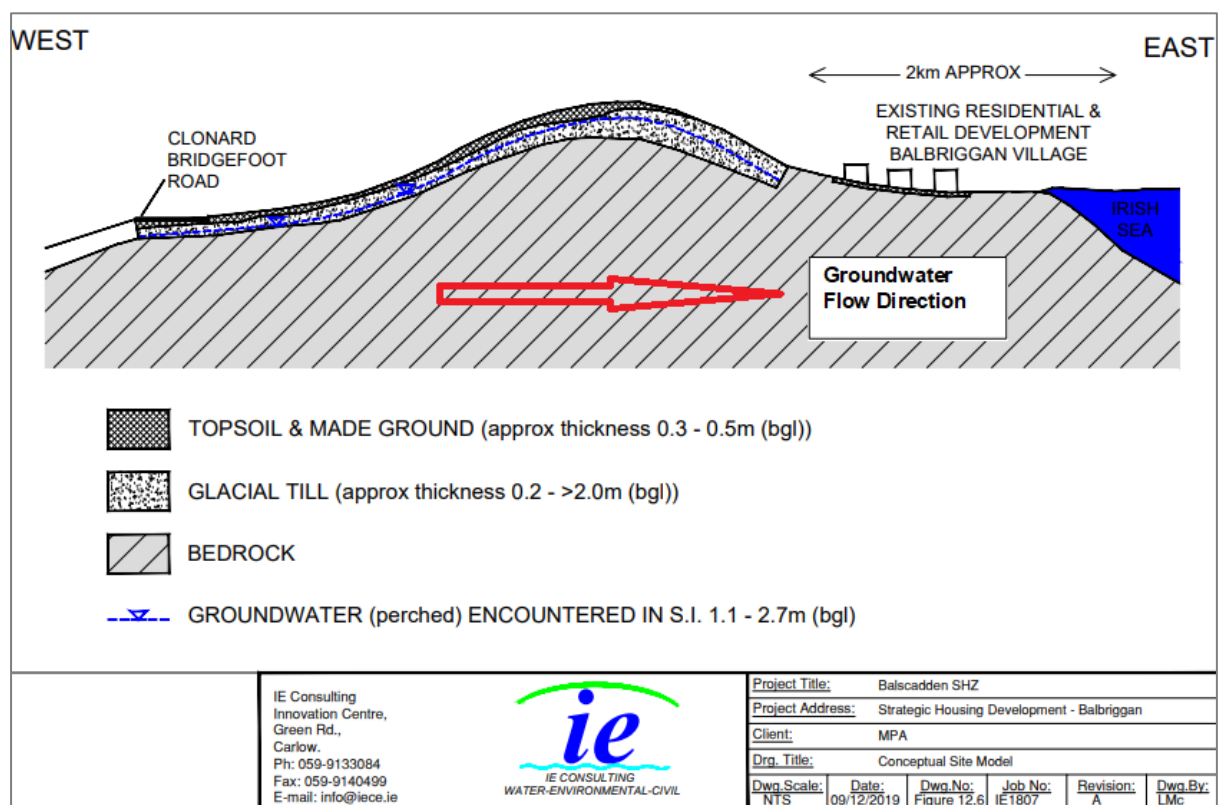


Figure 6.8 Conceptual Site Model

6.6.3 Construction Phase

During this phase the following activities may cause a potential impact;

- Excavation and re-use on site of inert soils and topsoil and some limited local extraction of bedrock.
- Excavation of Made Ground (only associated with current underground services), and
- Contamination of soils by site activities.

- Increased groundwater vulnerability
- Land take

6.6.3.1 Excavation of Inert Soils & Topsoil

Topsoil will be stripped and re-used where possible on site. Soil will be excavated as part of the construction works resulting in a permanent negative impact on the soils. The anticipated maximum depth of excavation is approximately 2.5m – 3.0m below the current ground level in a small area of the site.

The cut & fill assessment has been carried out based on the existing ground levels and proposed ground levels, it has assumed that all top soil will be retained on site for landscaping, tree pits, gardens and other landscape works to open spaces. It has been assumed that up to 20% of the cut material will not be suitable for reuse on site (boulders, soft clay / silts, or material with high moisture content).

Taking account of the cut & fill volumes noted below in Table 6.3 and the assumption of 20% cut material will have to be disposed of offsite and all top soil retained on site this means that the Net Fill volume increases to 55,270m³, this is less than the volume of imported aggregates, concrete and other hardstanding surfaces that are anticipated to be required for the construction phase of the project, hence there will be no requirement for imported fill other than construction based aggregates required for the works. The magnitude of this impact is **small adverse** in relation to the loss of fertile topsoil from the site. Fertile topsoil is a valuable environmental resource.

Total Volumes			
2D Area (sq.m)	Cut (Cu.M)	Fill (Cu.M)	Net (Cu.M)
190748.46	39350.0	47400	8050

Table 6.5 Results of Cut and Fill Assessment

In relation to the inert subsoils below the topsoil the impact is **negligible** due to the impact on the attribute being insufficient in magnitude to affect either use or integrity of any of the important features.

The significance of these effects would be described as **moderate** i.e. an effect that changes the character of the environment in a manner that is consistent with the existing and the emerging baseline, i.e. urbanisation spread of Balbriggan. This would be a **permanent** effect.

6.6.3.2 Excavation of Made Ground

There is a low/negligible potential for Made Ground deposits to be present on site based on historic and current agricultural land use. Site investigations at the site has shown that discrete areas of Made Ground present on site are associated with service runs as identified at trial pit 11. The site investigation did not identify areas of historic illegal dumping/infill. In relation to the excavation of Made Ground the impact is **negligible** due to the impact on the attribute being insufficient in magnitude to affect either use or integrity of any of the important features. The significance is **imperceptible**.

6.6.3.3 Contamination of Soils

There is always a potential for localised contamination of soils during construction. This can happen through construction materials leaching into the underlying soils, dewatering or construction related spillages resulting in a permanent negative impact on the soils.

In the case of soils, the magnitude of this impact is **small adverse** as it may result in the requirement to remediate by excavation/disposal of small quantities of impacted soils or result in residual low concentrations of anthropogenic materials to be left in the soils that are not a risk to receptors. Its significance is **imperceptible** for all important features. This assessment is based on professional environmental risk adverse construction practices being enforced on site.

6.6.3.4 Increased Groundwater Vulnerability

There is perched groundwater within the subsoils. The subsoils deposits are considered shallow with weathered bedrock encountered at approximately 2m depth. Under the requirements of the Water Framework Directive, the Balbriggan Groundwater Body is classified as having an overall status of good status for water quality for 2010 – 2015. Groundwater analysis at the site confirms this. The shallow cover of subsoils over the bedrock and the likelihood that construction will reduce this depth does increase groundwater vulnerability to the failure of sewer pipelines or accidental hydrocarbon leakages or spillages from vehicles etc. This is a likely **negative permanent** and **significant** impact in the absence of mitigation measures.

6.6.3.5 Land Take

The site is currently in use as agricultural tillage land. It has been set out in the Development Plan since 2005 to be zoned for housing development. The site will result in the loss of valuable tillage land in the local area but the decision to develop the site has been decided upon by the planning hierarchy in advance of this submission. This impact has been assessed as **permanent and neutral**.

6.6.4 Operational Phase

The operational phase of the project is predicted to have a neutral, moderate long-term effect on the land and soil. This is based on the reasoning that the development is in line with the policies of Fingal Development Plan 2029 to 2029 to provide residential development in this area.

The effect is classed as **moderate** as it is changing the character of the environment in line with emerging baseline and existing trends i.e. the development surrounding the site.

The operational phase will result in substantial areas of soil sealing. In addition there is potential for failure of sewer pipes and leakage of contaminants to the sub soils and groundwater and surface waters. Car parking is to be on impermeable areas that are equipped with petrol interceptors in the drainage system to prevent hydrocarbon contaminants reaching sensitive receptors. Mitigation measures will be put in place to minimise these impacts. These are discussed in detail in section 6.7.1.

6.7 Remedial and Reductive Measures

Remedial, mitigation and avoidance measures describe any corrective or mitigation measures that are either practicable or reasonable, having regard to potential impacts. This includes avoidance, reduction and remedy measures as set out in section 4.7 of the Development Management Guidelines 2007 to reduce or eliminate any significant adverse impacts identified. It should be noted that a number of mitigation measures proposed in other chapters within this EIAR are also of relevance to material assets but will not be repeated here.

The EPA 2022 Guidelines list four established strategies for mitigation of effects;

Avoidance

Usually referring to strategic issues such the selection of alternative location or processes in order to avoid certain effects.

Prevention

Prevention usually refers to technical measures, such as putting in place measures to prevent an effect (e.g. noise) from reaching unacceptable levels.

Reduction

Reduction is a common strategy for dealing with effects that cannot be avoided, e.g. emissions. This can include measures to reduce the effect, or to reduce exposure to the effect.

Remedy/Offsetting

Remedy or offsetting is commonly used to deal with effects which cannot be prevented or reduced. An example would be replanting of trees to replace trees whose cutting was unavoidable

6.7.1 Construction Phase

A project specific Construction Environmental Management Plan (CEMP) will be prepared and submitted to the planning authority for approval. It should address the cumulative impacts of this proposed development in conjunction to the Taylors Hill Phased development.

It will be maintained, and the procedures implemented by the contractor for the duration of the construction period. It will manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages. All site personnel will be trained in the implementation of these procedures as part of the site induction process.

The CEMP will adhere to best practice and consider site specific issues such as;

- Earthworks operations shall be carried out subject to a soil management plan which will outline where topsoil to be re-used on site and find suitable re-use for this finite resource at offsite locations. The construction will be phased, which allows topsoil management and soil protection from run-off as site is stripped in stages. The use of environmental degrading or persistent chemicals to remove vegetation from the site will not be permitted. Topsoil shall not go to landfill or similar disposal routes. It will be managed to prevent run-off of soil sediment with diversion of clean surface water around the stockpiles. A minimum stockpile height of 2m high will be enforced and vegetation will be encouraged to stabilise the piles. Silt fencing will be placed around each stockpile.
- Good housekeeping – waste management, chemical storage and use, adequate covered car parking to ensure hydrocarbons do not leach into exposed soils from leaking vehicles etc; double walled tanks, bunded areas and spill control systems.
- Maintenance of plant and machinery to ensure fuels and chemicals associated with these do not find their way into soils and groundwater;
- Waste Management - Materials management to ensure surplus materials and packaging is not buried under buildings and topsoil;
- Waste Management – Any materials that cannot be re-used, recycled or avoided to be generated will be disposed to a waste management site. All paperwork including waste consignment notes will be recorded and filed in addition to the NWCPO licence of the receiving waste management facility and the NWCPO licence of the haulier. Waste streams must be segregated on site.
- Chemical and Fuel Storage- To be bunded and spill kits to be available on site.
- The cut & fill assessment has been carried out based on the existing ground levels and proposed ground levels, it has assumed that all top soil will be retained on site for landscaping, tree pits, gardens and other landscape works to open spaces. It has been assumed that up to 20% of the cut material will not be suitable for reuse on site (bounders, soft clay / silts, or material with high moisture content).
- Taking account of the cut & fill volumes noted below and the assumption of 20% cut material will have to be disposed of offsite and all top soil retained on site this means that the Net Fill volume increases to 55,270m³, this is less than the volume of imported aggregates, concrete and other hardstanding surfaces that are anticipated to be required for the construction phase of the project, hence there will be no requirement for imported fill other than construction based aggregates required for the works.
- The site design does not currently require slope stabilisation. In the event that this changes a specialist Geotechnical Engineer will assess and design any slope or retaining features.

The above protocols should be audited on a monthly basis as part of the environmental health and safety site audit carried out by the main contractor. The results of which should be provided to the local planning authority. If the above is adhered to this will ensure that the impacts of all short term negative impacts associated with construction are imperceptible and neutral.

6.7.2 Operational Phase

Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater.

Communal landscaped areas managed by the development management company should endeavour to limit pesticide use etc to maintain the integrity of soils.

The impact of soil sealing will be mitigated against by the use of sustainable urban drainage features such as swales etc.

Design should encourage the redistribution of topsoil to garden and communal landscaping areas where practical.

Continuing maintenance of foul water pipelines by Irish Water or other relevant authority should minimise the potential for sewerage related contaminants to be released to subsoils.

Cumulative impacts of the adjacent Taylors Hill & Ladywell development in conjunction with this one should be considered in relation to soil stripping and prevention of sediment run-off into water courses. Silt/sediment interceptors/barrier should be set up to safeguard the Clonard Brook against run-off.

The Local Authority or Estate Management Team should ensure fuel interceptors etc. are maintained and that chemical use on public landscaped areas is limited.

6.8 Predicted Impact of Proposed Development

Through the implementation of measures as outlined in section 6.7 the magnitude of any impacts both from the construction and operations phases of the project are negligible. An exception to this is the reduction in agricultural land which cannot be mitigated against.

The significance of all other impacts is not significant.

6.8.1 Do Nothing Impact

In order to provide a qualitative and equitable assessment of the proposed development, this section considers development in the context of the likely impacts upon the receiving environment should the proposed development not take place.

If the proposed development does not take place then there would be no soil sealing and loss of soil as an agricultural resource.

6.8.2 Worst Case Impacts

During the groundworks phase oil spillage could be washed into the public drainage system. To prevent such an occurrence, surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing combined drainage system.

During the construction phase, spillage of hydrocarbon fuels could contaminate the subsoil and / or groundwater. To prevent such an occurrence, any oil or petrol storage tanks will be located in suitable bunded areas. These measures will alleviate any concurrent interactive impacts.

6.8.3 Potential Cumulative Impacts

The cumulative effects of the proposed development on land and soils have been assessed taking into consideration other planned, existing and permitted developments in the surrounding area into account. Adjacent developments include Taylors Hill 2No. phases of which have been completed to date and phases are yet to be completed. In addition other developments are proposed for the area but are not at the planning application stage as yet.

With all these in mind it is predicted that that proposed development will contribute positively to the overall urban structure of Balbriggan and the Greater Dublin area in terms of provision of much needed housing development.

It will have negative cumulative effects in that it increases the area of agricultural lands lost to soil sealing. It also reduces the permeable area of soils currently present to alleviate flooding. The flood risk assessment document and chapter 7 deals with the issue of flooding and surface water run-off in greater detail.

6.9 Monitoring

6.9.1 Construction Phase Monitoring

The construction phase will be monitored, in particular in relation to the following;

- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road sub-formation level in advance of placing capping material, stability of excavations etc.);
- Inspection of fuel / oil storage areas;
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities;
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill; protection of soils from contamination for removal from site);
- Soil removed during the construction phase will be monitored to maximise potential for re-use on site;
- Protection of topsoil stockpiled for re-use;
- Adequate protection from contamination of soils for removal;
- Cleanliness of adjoining road network;
- Prevention of oil and fuel spillages;
- Dust control;
- Representative soil samples will be taken of the excavated material to confirm its suitability for re-use on the site and/or to facilitate classification for removal off site;

6.9.2 Operation Phase Monitoring

The onsite SUDs will be maintained and inspected on a regular basis as per the design requirements. This is discussed in further detail in Chapter 7.0 Water of the EIAR.

List of Figures

Figure 6.1	Approximate Outline of Proposed Development Site
Figure 6.2	Location of Nearby Surface Water Features and Springs
Figure 6.3	Extract from Teagasc Soils GSI Website
Figure 6.4	Extract from 1:100,000 Scale Solid Bedrock Geology, GSI website
Figure 6.5	IGSL 2019 Site Investigation Exploratory Hole Location Plan
Figure 6.6	EPA Groundwater Data Viewer – Groundwater Contour Mapping
Figure 6.7	Location of Surface Water Sample
Figure 6.8	Conceptual Site Model

List of Appendices

Appendix 6.1	Proposed Development Masterplan Drawing
Appendix 6.2	IGSL Site Investigation Report

7.0 HYDROLOGY & HYDROGEOLOGY

7.1 Introduction

This chapter provides a description of the existing hydrology and hydrogeology within the study area of the proposed development and its immediate surroundings. This chapter also describes and assesses the likely impacts on these elements associated with both the construction and the operational phases of the proposed development.

Potential impacts of the proposed development area are identified, and residual impacts are described. This chapter uses the assessment methodology described in the *EPA Guidelines on the Information to be contained in Environmental Impact Statements, 2022*. It also details the publicly available baseline data for the existing environment and investigates the potential impacts of the development and associated mitigation measures to be adopted. This section has been prepared by IE Consulting Ltd, water, environmental and civil engineering consultancy established in 2001. IE Consulting provide specialist services in hydrogeology and environmental geology.

This chapter has been prepared by Jacqueline McHugh CEng, CEnv MCIWEM on behalf of IE Consulting. She graduated from the University of Abertay, Dundee 2001 with a Masters in Environmental Management and Urban Drainage, previously having completed a Bachelor of Science Degree in Environmental Technology in 2000 and a Higher National Certificate in Civil Engineering in 1995. Jacqueline has over twenty years of experience in the planning and development consultancy in both the UK and Republic of Ireland. Her project experience including large scale housing developments, motorway schemes, waste disposal sites and power stations. The Hydrology and Hydrogeology Chapter has been reviewed by Mr. Jer Keohane, a director with IE Consulting, who has over 37 years' experience in consulting and whose qualifications include a B.Sc Degree in Geology, Masters in Water Resource Engineering and C.Geol FCIWEM MIEI.

7.1.1 Study Area – Development Area

The location of the development area is presented in **Figure 7.1**. For the purposes of the full and thorough assessment of the development this area is further extended by a radius of approximately 2km in accordance with IGI guidelines. The masterplan drawing is presented in **Appendix 7.1** and shows the extent of the development.



Figure 7.1 Proposed Development Site

7.2 Research Methodology

7.2.1 Hydrology & Hydrogeology

This chapter adheres to the principles set out in “*The Planning System and Flood Risk Management - Guidelines for Planning Authorities*” a document published in 2009 by the Office of Public Works (OPW), Department of Environment, Heritage & Local Government (DEHLG) and the Fingal Development Plan (2023-2029). Key pieces of legislation were also given consideration in this assessment;

- EC (Drinking Water) Regs 2014 (S.I. No. 122 of 2014);
- EC Environmental Objectives (Groundwater) Regs 2016 (S.I. No. 366 of 2016);
- EC (Water Policy) Regs 2014 (S.I. No. 350 of 2014);
- EC (Quality of Salmonid Waters) Regs 1988 (S.I. No. 293 of 1988);
- The EU Water Framework Directive, 2000/60/EC;
- The Groundwater Directive, 2006/118/EC;
- The EU Floods Directive, 2007/60/EC; and
- Water Services Acts (2007 – 2014).

Data used in the baseline study for water was collated from the following publicly available sources;

- Aerial photography from Google maps;
- Site Reconnaissance Visit for desk study undertaken 19th March 2019;
- Flood History of the Site from the OPW National Flood Hazard Mapping website (www.floodmaps.ie);
- OSI Mapping Tool Geohive - www.geohive.ie;
- Geological Maps, GSI (www.gsi.ie);
- Site Geological and Hydrogeological data from the Geological Survey of Ireland – GSI Spatial Resources Viewer (www.gsi.ie);
- Predicted Extreme Water Levels and Flood Extent Maps, Irish Coastal Protection Strategy Study (ICPSS);
- Report No. 22009 - IGSL Site Investigation Report 2019 (See Appendix 6.2); and
- Fingal Development Plan 2023 – 2029 – Strategic Flood Risk Assessment for the Fingal Development Plan 2023 – 2029.
- Previous EIA statements carried out under Crescent Park Planning Applications F08A/1329 and F07A/1249;

7.2.2 Assessment Methodology

The potential impact i.e. significance of the effects of the proposed development is generally understood to mean the importance of the effects (the consequences of the change). Significance is determined by a combination of (objective) scientific and subjective (social) concerns. Effects are assessed on the following;

- quality (i.e. positive, negative or neutral),
- significance (imperceptible, slight, moderate, significant or profound),
- duration (short term, medium term, long term, permanent or temporary),

- extent, and
- context.

In the collation of information to describe effects reference has been made to the criteria set out in Table 3-4 *Checklist for Information Required to Describe Effects* as set out in the EPA document – *Guidelines on the Information to be contained in Environmental Impact Assessment Report 2022*. Assessment should also take consideration of interactive impacts e.g. deterioration of surface water quality in an area due to site clearance and soil run-off. Finally, cumulative impacts are also to be addressed/considered, i.e. the addition of many minor or significant effects, including those of neighbouring projects to create larger more significant effects.

This document outlines a thirteen-step methodology as per the *Guidelines for the preparation of Soils, Geology and hydrogeology Chapters of Environmental Impact Statements*, IGI 2013, which has four distinct elements as follows;

- Initial Assessment (Steps 1 – 5);
- Direct & Indirect Site Investigation and Studies (Steps 6 – 9);
- Mitigation Measures, Residual Impacts and Final Impacts Assessment (Steps 10 – 12); and
- Completion of the Hydrogeological (Water) Sections of EIAR (Step13).

The initial assessment as outlined in section 7.3 describes the hydrological and hydrogeological receiving environment and presents a description of the past and present uses of the site and other neighbouring sites.

This section also describes the nature of the site based on both site specific and neighbouring site investigation data from publicly available sources where available. Section 7.5 lists the predicted impacts associated with the development of the site. The magnitude of the potential impact is ranked in accordance with the IGI Guidelines, and this allows the significance of the impact to be determined.

Following the assessment of the impacts, specific mitigation measures have been developed to avoid, reduce and if possible, remedy any negative impacts on the hydrology & hydrogeology. These are described in section 7.6.

Residual impacts are described in section 7.7. The magnitude and significance of these residual impacts have also been classified on the IGI Guidelines.

7.3 Receiving Environment

7.3.1 Site Location and Setting

The proposed development is located northwest of Balbriggan in the townland of Clonard or Folkstown Great. It lies approximately 1.2 km to the east of the M1 motorway. Flemington Lane with detached dwellings lies to the North of the site. To the north east, east and southeast of the site are more substantial residential developments. The south of the site is bounded by agricultural land zoned for development. There is construction also happening in the area as Taylors Hill Phase 2 has commenced to the southeast.

The west of the site is bounded by Bridgefoot Road, L1130 with intermittent hedgerow. Along this boundary to the northeast of the proposed development is the Balbriggan Water Supply Scheme Reservoir.

A school named Colaiste Ghlór na Mara is to the Southeast of the site facing onto the Boulevard Road accessed from the R122. To the southeast on Clonard-Bridgefoot Road is a pre-school called Helgas. **Appendix 7.1** shows the Masterplan for the residential development which states that the site is 22.62ha (55.9 acres); (including Residential Site Area: 19.28ha (47.6 acres) & Class 1 Open Space - 2.8667ha (7.1 acres).

7.3.2 Topography & Land Use

The site is slightly dome shaped sloping from Flemington Lane at the north towards the south of the site. The site rises gradually up from Bridgefoot Road. There is a steep rise from the existing residential development to the east to the centre of the site. This forms a local ridgeline and forms a setting to the town of Balbriggan. The site ranges in height from 30mAOD to 70mAOD.

The site is currently in agricultural use and most fields during the site reconnaissance visit were sown with arable crops. To the east of the proposed development land-use is residential/urban. To the north and west is rural with the south being more developed for infrastructure – distributor roads and schools.

7.3.3 Surface Water Features

The nearest open channel watercourse known as Clonard Brook is located 600m to the south of the site and is shown to run from west to east in the EPA mapping. Refer to **Figure 7.2** below The EPA mapping shows that the source of this watercourse was a spring to the east of Bridgefoot Road, this is now mapped by the GSI as a historic spring see below, Clonard brook is now fed from the west by a series of agricultural drainage ditches.

The closest surface water feature to the site, not on the site but approximately 220m to the east of the site is referred to as Clogheder (EPA Code 08C26) from Taylor Hill Grange heading east. This watercourse is now culverted through a housing development.

Similarly the Bremore Stream 08B41 runs roughly North south, through a housing development, and also appears to be culverted, before being joined by the Clonard Brook and heading east to the sea.

The watercourse discharges to the coast just north of Tankardstown Lifeboat House and Martello Tower. Its course is a southeast to northeast flow.

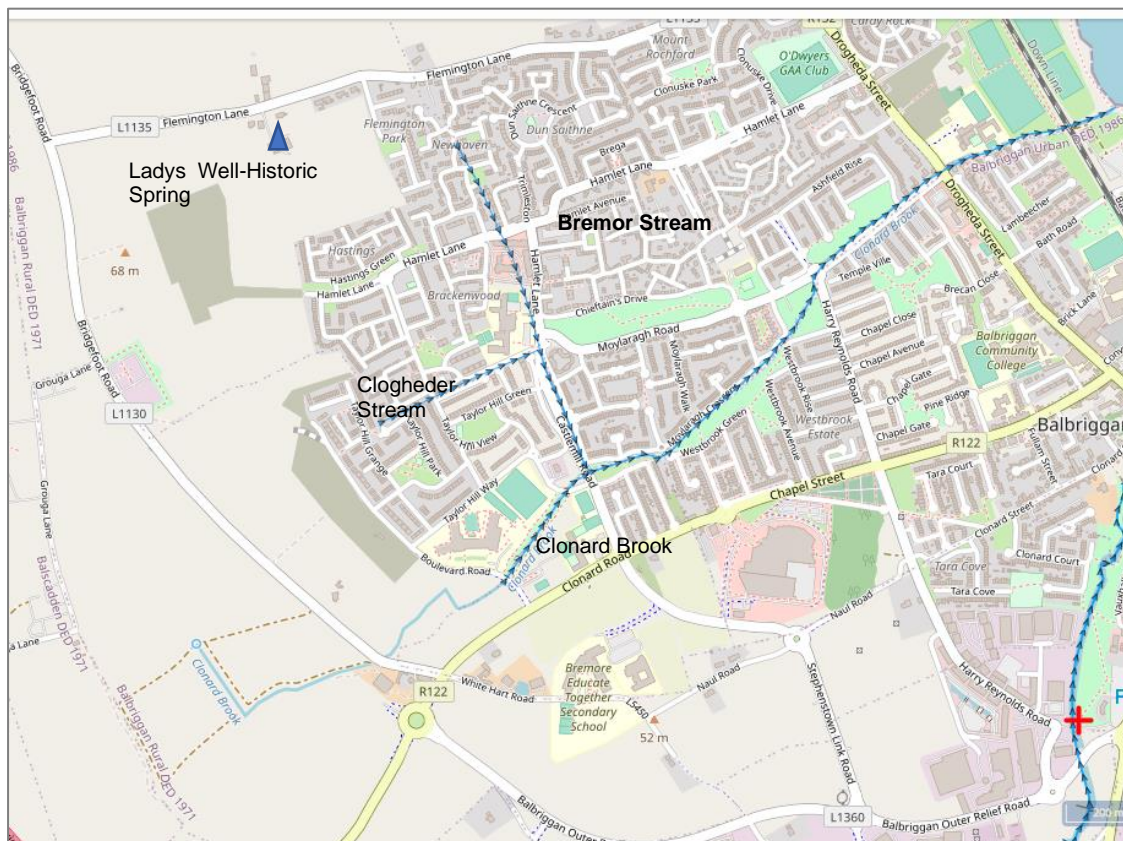


Figure 7.2 Location of Nearby Surface Water Features and Springs

Other water surface features identified on EPA mapping off-site were as follows;

- 220m to the east, Clogheder, EPA Code 08C26, flowing east-west and culverted under Martello Close/Martello View - meets the Bremore
- 630m to the east, Bremore/Matt, EPA Code 08B41, flowing north-south to east and culverted under the shopping centre “Dunnes Stores” to the east and towards Moylaragh Mews,
- 1.76km to the south, “unidentified by name” EPA Code 08M01, flowing to the southeast to northeast, where it meets “Stephensontown 08 (EPA Name),
- 2.3km to east, Northwest Irish Sea Balbriggan Front Strand Beach, and
- 1.34 km to the northwest, Gormanstown, EPA Code 08G14, flowing to the northeast – tributary of the River Delvin which is greater than 2km to the north.

7.3.4 Existing Site Water Management

Currently as the site is undeveloped and is in agricultural use as tillage land there is little or no drainage infrastructure present except for hedgerow ditches with drainage runs. During the site walkover it was noted that some areas of the fields although not visibly waterlogged were saturated and therefore soft/muddy under foot.

7.3.5 Regional Hydrogeology

The Groundwater Body associated with the site is the “Balbriggan GWB” described as productive fissured bedrock, EU Code IE_EA_G_039. Based on the GSI Aquifer classification categories the site is described as being underlain by a locally important aquifer, i.e. bedrock which is generally moderately productive. An extract from the GSI Mapping is presented in **Figure 7.3** below.

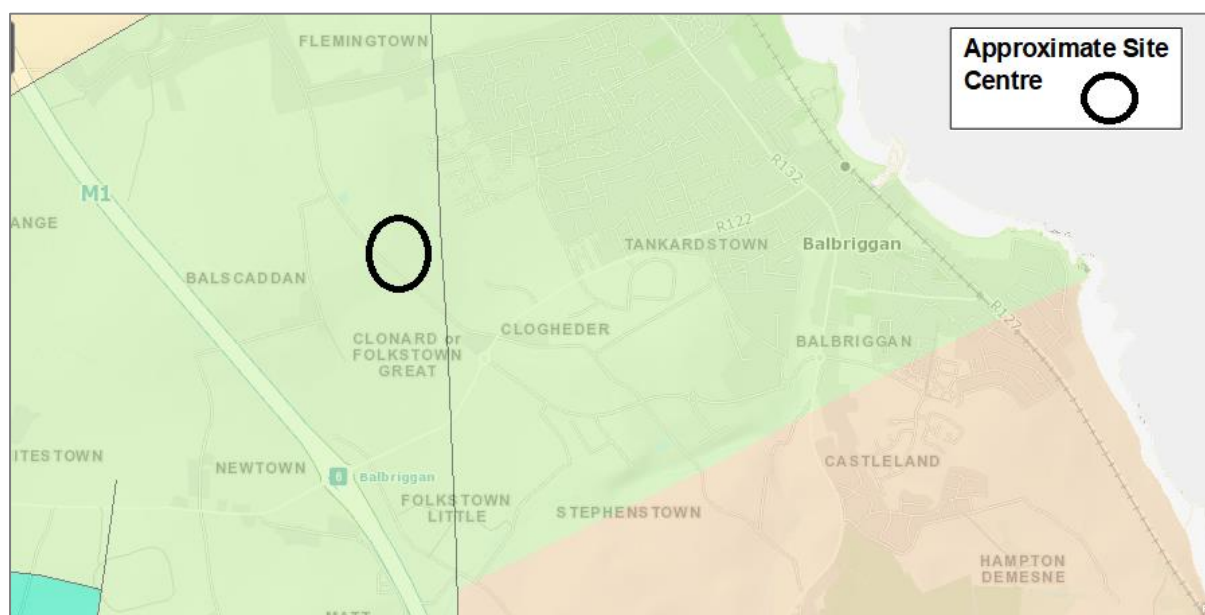


Figure 7.3 Extract from GSI Mapping – Groundwater Aquifer Mapping

One groundwater well was identified on the GSI mapping adjacent to the site. It is referenced as a spring called “Lady Well” in the northeast of the site.

Information from archives suggests that this spring emerges from a localised topographic depression and area of broken rock. The proximity of a mapped N-S trending fault to the location would suggest that the fault may be impeding groundwater flow to the east, and resulting in upward flow, through an

area of thin or permeable subsoils. The recharge area for this spring is more likely to be the higher ground to the west towards the Motorway, rather than the proposed development site.

This feature is recorded as a monument on historical maps as shown below and the potential impact on this feature is discussed below.

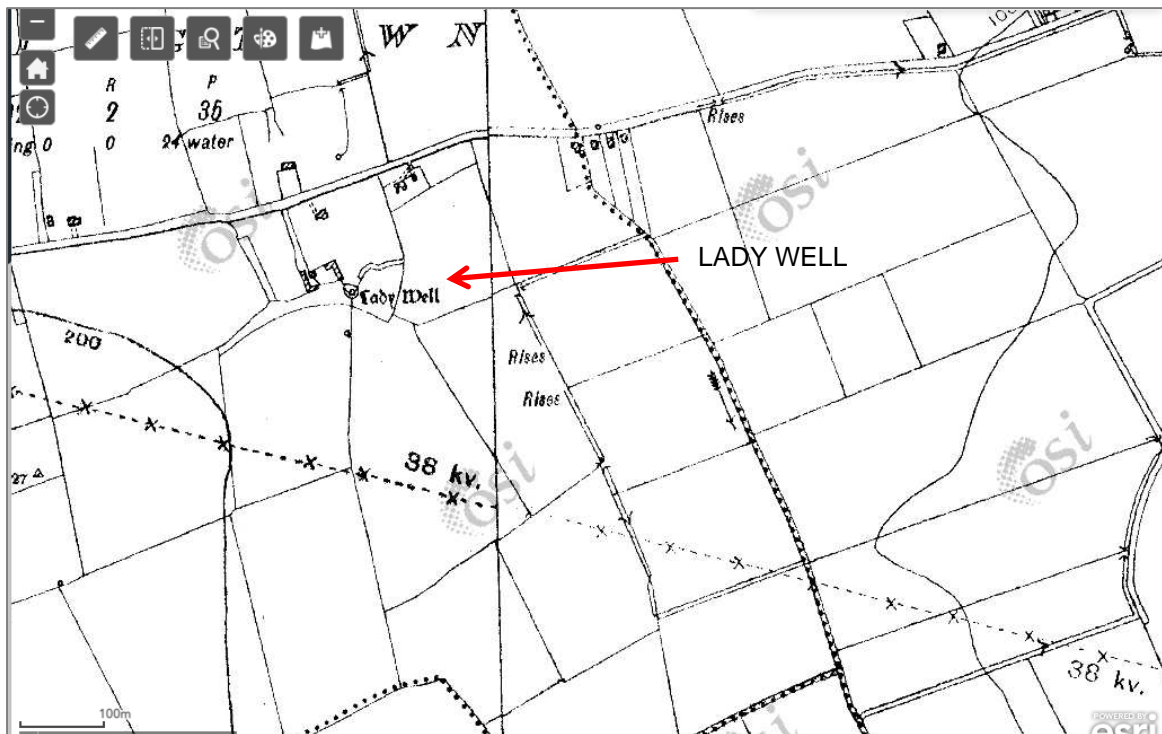


Figure 7.4 Location of Ladywell

There are a number of mentions of rises in the area, suggesting it is a discharge area for groundwater. The GSI describe the general groundwater flow direction of the Balbriggan groundwater body to be northeast towards the coast and the River Delvin.

Pumping tests in the Ordovician volcanic rocks at Balbriggan (Belcamp Formation) have shown this formation to have higher transmissivity than the surrounding Lower Paleozoic rocks (Cullen 1994). Estimated values of transmissivity are between 20 and 30 m²/d. It is possible that deformed bedrock along the fault identified on site may cause an increase in permeability.

The locally important aquifer is considered to be of medium importance according to the IGI guidelines. Balbriggan Groundwater Body: Summary of Initial Characteristics is presented in **Appendix 7.2**.

7.3.6 Groundwater Vulnerability

Aquifer or groundwater vulnerability is a relative measure of the ease with which the groundwater could potentially be contaminated by human activity and depends on the aquifer's intrinsic geological and hydrogeological characteristics. The vulnerability is determined by the overlying deposits. The GSI utilises five categories of vulnerability for mapping the risk to groundwater;

- Extreme rock or at or near surface or karst,
- Extreme,
- High,
- Moderate, and

- Low

The GSI has characterised the site as low groundwater vulnerability (green shading) in the southeast and northeast of the site. It characterises it as moderate vulnerability (yellow shading) in the north, east, southeast and northwest. Groundwater vulnerability increases to high towards the higher ground west and southwest of the site (orange/brown shading). There is a discrete section in the southwest characterised by extreme groundwater vulnerability (pink shading). An extract from the GSI Mapping is presented in **Figure 7.5** below. It is likely that this area of elevated topography and of extreme vulnerability to the south and west will be the most likely recharge area, for mapped discharge features (such as Lady's well) around the site.

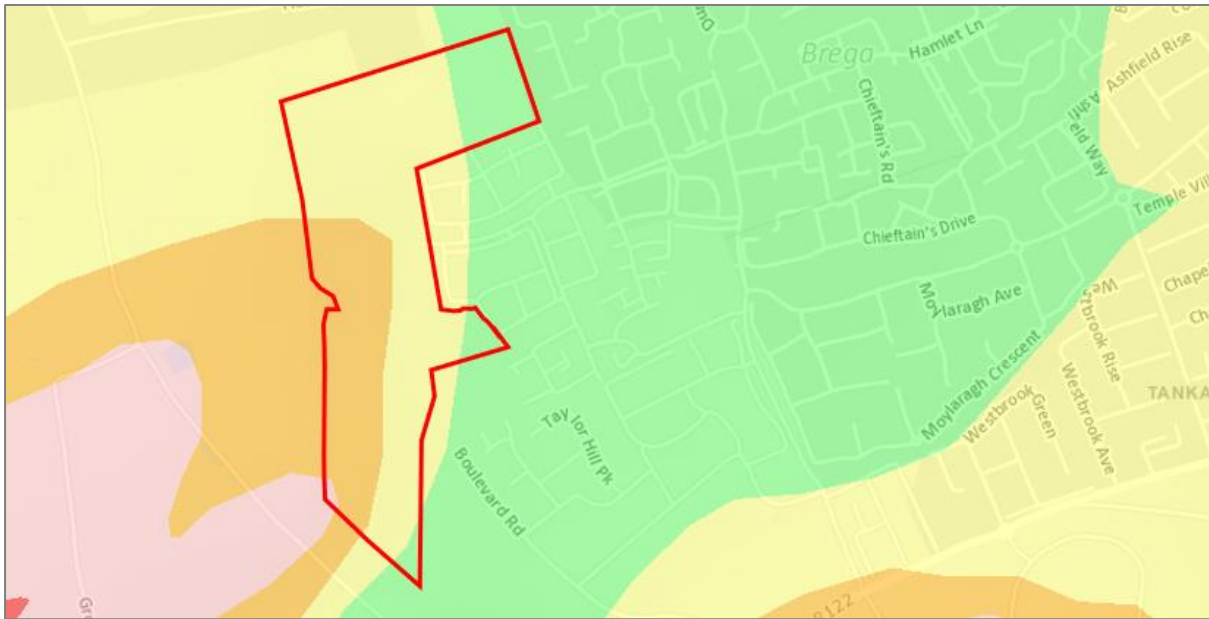


Figure 7.5 Extract from GSI Mapping – Site Groundwater Vulnerability

7.3.7 Groundwater Recharge

The GSI calculates the effective rainfall across the site as 390mm/yr and the recharge co-efficient, which is the proportion of effective rainfall to recharge groundwater, is 22.5%. Effective rainfall is the amount of rainfall available as either recharge to ground or run-off to surface water after evaporation or taken up by plants.

Recharge is the amount of rainfall that replenishes the aquifer. It is a function of effective rainfall, the permeability and thickness of the subsoil and the aquifer characteristics. The GSI defines the maximum recharge to the bedrock as 100mm per year. **Figure 7.6** is an extract from the GSI website showing the recharge characteristics for the site.

As stated above, it is likely that the bedrock aquifer is recharged on the higher ground to the west of the site, as discussed in 7.3.6 above.

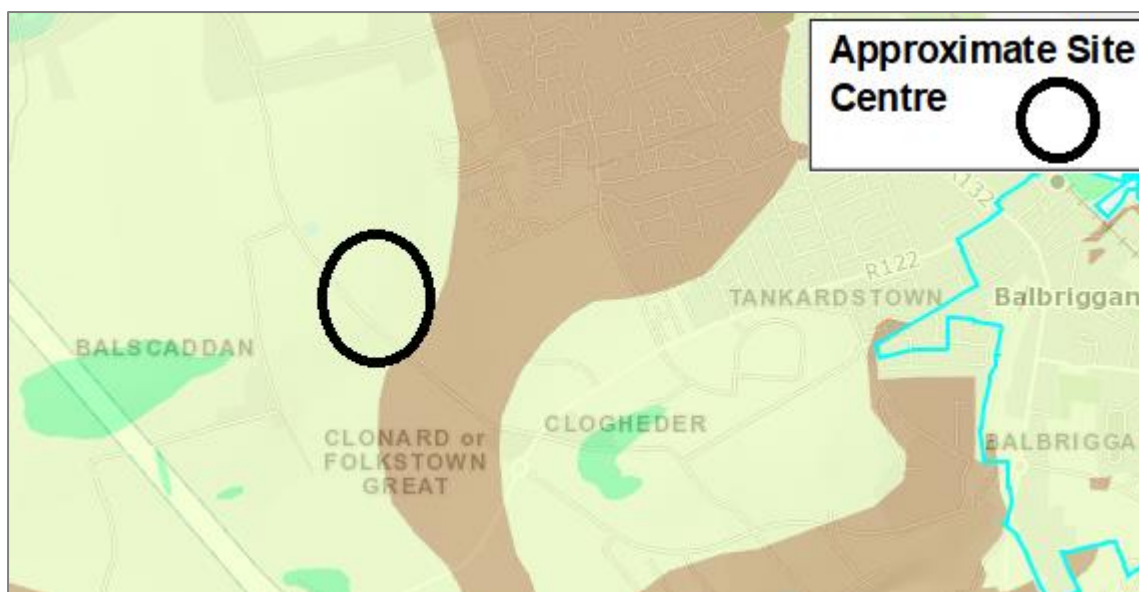


Figure 7.6 Extract from GSI Mapping - Groundwater Recharge

7.3.8 Site Hydrogeology

The GSI data describes subsoil permeability at the site as low.

A site investigation was undertaken of the proposed development site in October 2019 with groundwater monitoring and sampling commenced in September 2019 and continued until January 2020. The investigation comprised the excavation of 17 No. trial pits to a maximum depth of 3.50mbgl and 4 No. boreholes to a maximum depth of 4.90 mbgl. **Figure 7.7** shows the exploratory hole location plan for the site.

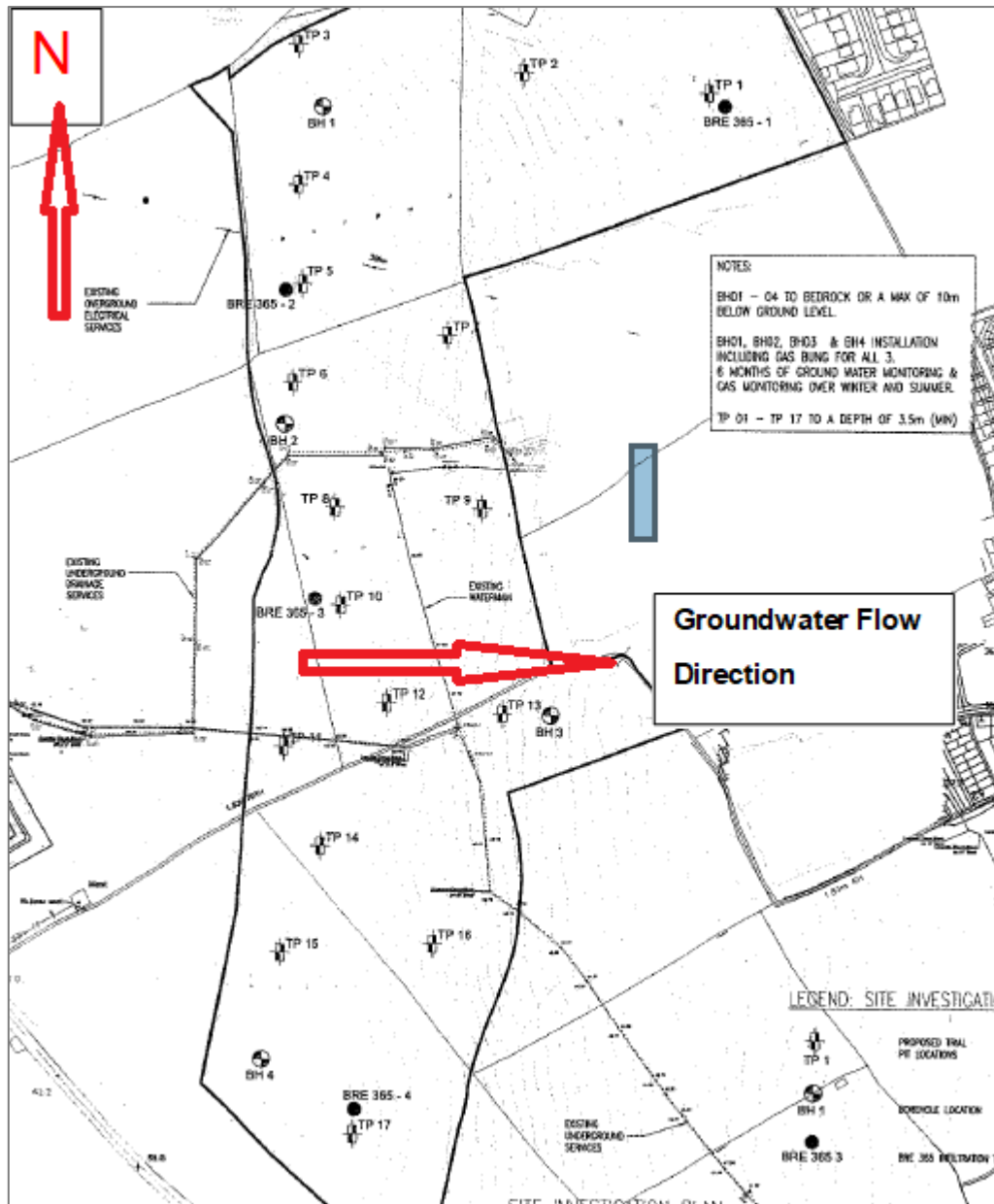


Figure 7.7 IGSL 2019 Site Investigation Exploratory Hole Location Plan

Groundwater monitoring installations were constructed at three borehole locations and monitoring took place between September 2019 and January 2020. The results are presented in **Table 7.1** below.

Borehole ID	Date of Water Level Reading				
	04.09.2019	20.09.2019	22.10.2019	27.11.2019	13.01.2020
BH01	Dry	Dry	Dry	Dry	Dry
BH02A	Dry	Dry	Dry	2.20 m	2.70 m
BH03A	***	***	***	***	***
BH04	1.95 m	Dry	Dry	1.05 m	1.40 m

Table 7.1 Groundwater Level Monitoring in Boreholes

Borehole BH01 and trial pit TP01 were not within the proposed development area. The groundwater level readings ranged from dry to 2.70 mbgl/47.78mAOD and are likely perched groundwater within the glacial tills.

Groundwater installations were shallow and did not go into bedrock. The boreholes were positioned to allow triangulation and assessment of groundwater direction flow. As can be observed from the results above it was not possible to recover readings consistently from three boreholes to allow the triangulation of groundwater levels.

For this reason the GSI's Groundwater Data Viewer was used to determine direction of flow. **Figure 7.8** below shows that groundwater flow direction is to the east. The red arrow depicts the flow of the groundwater.

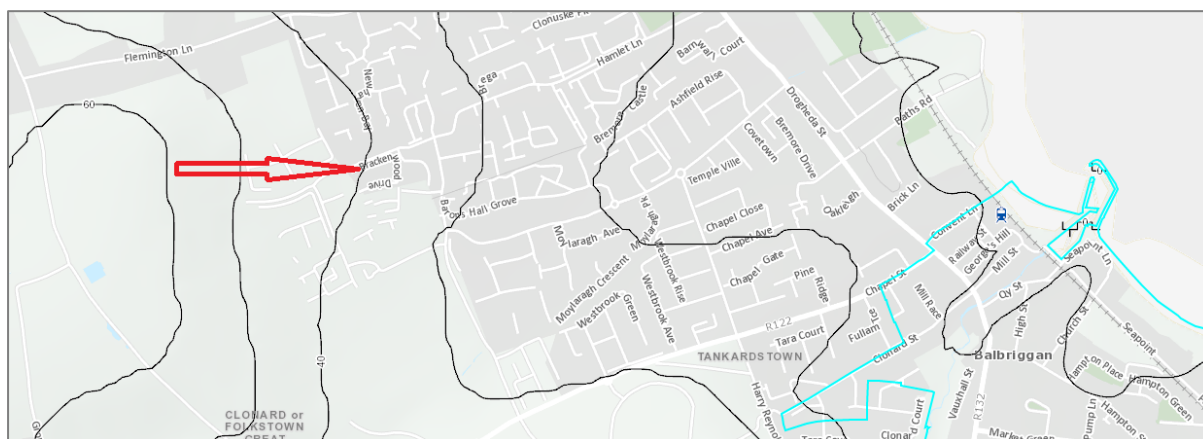


Figure 7.8 EPA Groundwater Data Viewer Groundwater Contour Mapping

In addition two groundwater samples were recovered in November 2019 from boreholes BH02A and BH04 and sent to Chemtest laboratory in the UK for analysis. The results of these are discussed in section 7.3.9 that follows.

7.3.9 Groundwater Quality

Under the requirements of the Water Framework Directive, the Balbriggan Groundwater Body is classified as having an overall status of good status for water quality for 2010 – 2015. The Nanny-Delvin Catchment Assessment 2010-2015 (HA08) states that the Balbriggan Groundwater Body is in a review status due to elevated nitrate concentrations.

GSI Spatial Resource Viewer defines no areas of drinking water protection on or within 2km of the proposed development. The groundwater quality was assessed in 2019 when a site investigation was undertaken. The parameters analysed were derived from the preliminary risk assessment in Chapter 6.0. The potential sources of contamination are listed there and analysis was tailored to assess the potential for these to have impacted groundwater.

The laboratory analysis and site investigation findings are as follows;

- 2No. groundwater samples were recovered and analysed from borehole BH02A and BH04 in December 2019;
- pH measurements were 8.6 and 8.3 units (EPA Interim Guideline Value (IGV) 6.5 – 9.5 units of pH) ;
- Electrical conductivity were 520 and 380 $\mu\text{S}/\text{cm}$ (IGV 1000 $\mu\text{S}/\text{cm}$)
- Dissolved oxygen were 8.0 and 8.3 mgO_2/l (No standard assessed as a trend over time)
- Total Petroleum Hydrocarbons (TPH) Criteria working Group – All results at or below method of detection – No standard but BTEX analysed to assess petroleum range - see below;

- Polycyclic aromatic hydrocarbons (PAH) – All results at or below method of detection and below IGV – benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene all have IGV below the method of detection;
- Benzene, Toluene, Ethylbenzene, Xylenes, (BTEX) and Methyl-Tert-Butyl Ether (MTBE) – All results at or below the method of detection and below IGV;
- Calcium, Potassium, Magnesium, Sodium, Arsenic, Boron, Cadmium, Copper, Iron, Mercury, Nickel, Selenium, Zinc, Chromium and Total Organic Carbon all above method of detection;
- Manganese were 33 ug/l and 7600ug/l (*Exceeds IGV 0.5mg/l*);
- Magnesium 8.5 ug/l and 8.6ug/l – IGV 50mg/l;
- Iron 220 ug/l and 120ug/l – IGV 0.2mg/l;
- Sodium 17 and 23 mg/l – IGV 150mg/l;

The following parameters were analysed for but have no IGVs – Potassium, Arsenic, Boron, Cadmium, Copper, Nickel, Selenium, Zinc and Chromium Total. These were assessed against S.I. No 9 of 2010 European Community Environmental Objectives Groundwater Regulations 2010 Schedule 5 – Groundwater Threshold Values.

The following utilised EU Drinking Water Standards;

- Arsenic <0.1 ND 2.0 ug/l – below threshold value of 7.5ug/l;
- Boron 31 and 37ug/l – below threshold value of 750ug/l;
- Cadmium 0.099 and 0.1 ug/l – below threshold value of 3.75ug/l;
- Copper 2.8 and 2.3ug/l – below threshold value of 15ug/l;
- Nickel 4.7 and 2.3ug/l – below threshold value of 15ug/l;
- Lead <1.0 and <1.0 – below threshold value of 18.75ug/l and
- Chromium Total 8.1 and 1.0ug/l – below threshold value of 375ug/l

Selenium returned concentration values of 1.3 and 1.2ug/l which is below the Drinking Water Standard. When screened against the EPA Interim Guideline Values and Drinking Water Standards and the Groundwater Regulations 2010 Schedule 5 – Groundwater Threshold Values results indicated that groundwater quality was of a good standard.

The testing is limited by the number of samples. Confidence can be assigned to the assessment by the risk assessment in Chapter 6.0 not identifying historic or current on or off-site sources of contaminants. In addition soil analysis at the site in 2019 did not suggest contamination of soils was an issue.

The exceptions to the above summary were manganese and iron. The manganese result of 7600ug/l exceeds the Drinking Water Standard of 50ug/l. It is likely that this concentration is reflective of the geological background chemistry, i.e. natural background level. One of the iron results is at the standard for drinking water i.e. 200ug is equivalent to 0.2mg.

The Soil Geochemical Atlas of Ireland shows that the Balbriggan area has an average soil background Manganese concentrations in the range of 801 to 1,100mg/kg. This would have an impact on groundwater Manganese concentrations.

An extract from the atlas showing the Manganese data is presented in **Figure 7.9**. There was no surface water or soil analysis of manganese concentrations undertaken to corroborate this theory. The desk study undertaken in Chapter 6 for land and soils however did not identify any likely sources of manganese contamination so it is assumed that the geology is the reason for this background concentration.

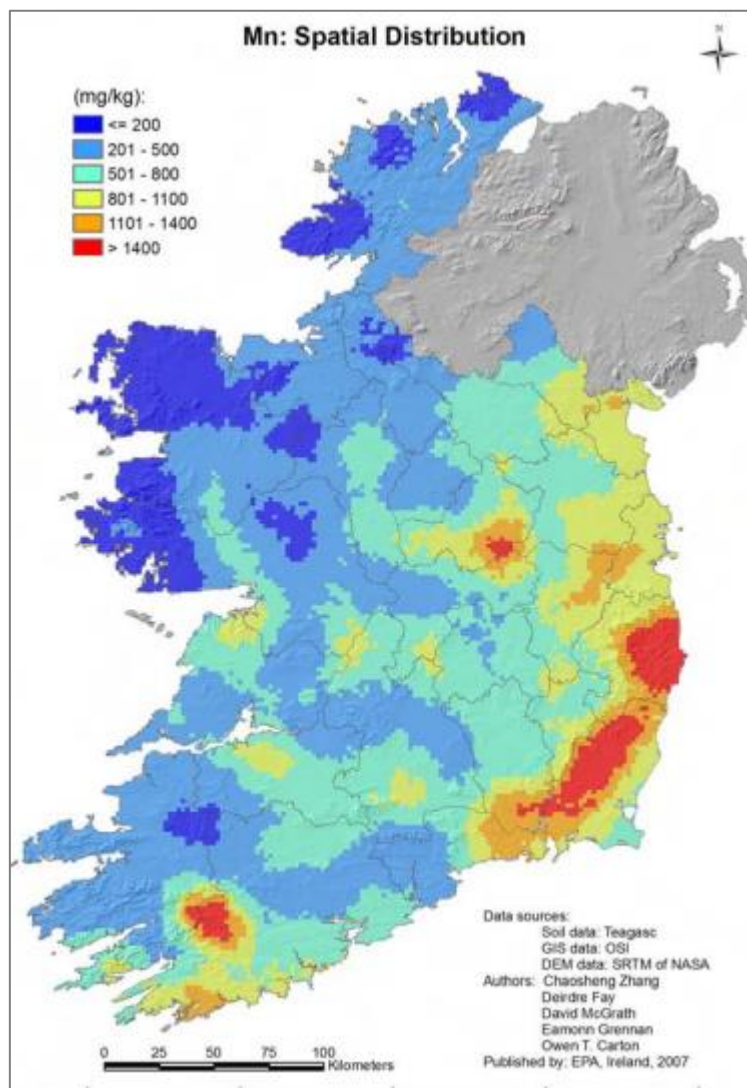


Figure 7.9 Manganese Background Soil Concentrations

In addition one sample returned a concentration for iron that was at the standard concentration of 0.2mg/l. This is likely also reflective of natural background iron groundwater concentrations as demonstrated in **Figure 7.10** below. It shows that Balbriggan is in an area where soil concentrations are ranging from 2.01 to 2.5% iron soil concentrations.

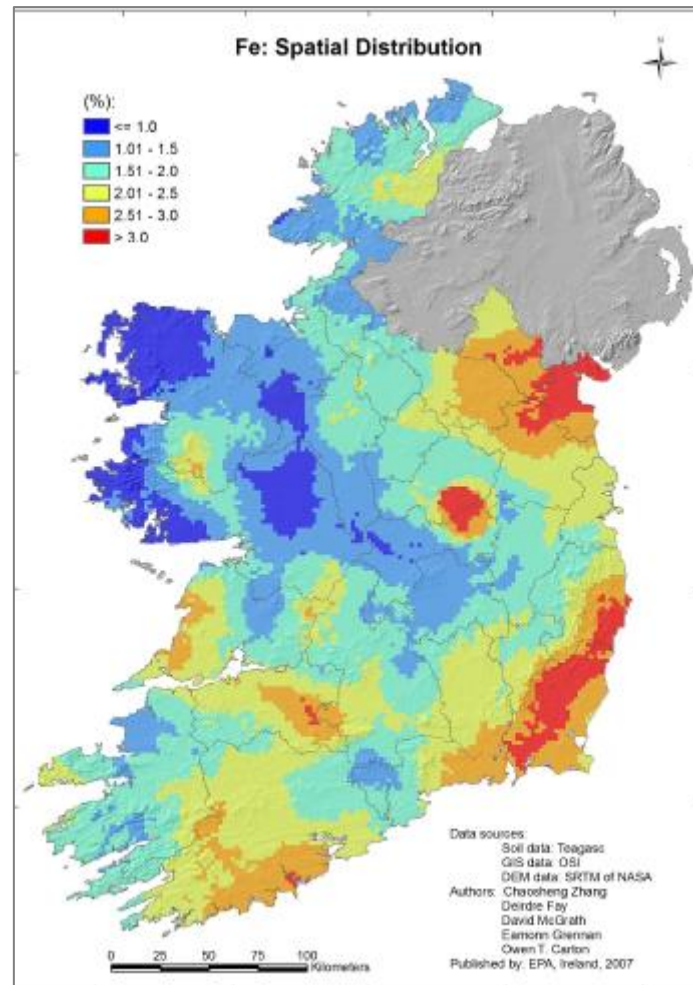


Figure 7.10 Iron Background Soil Concentrations

In summary the groundwater beneath the site based on two results is natural and good. It is unlikely that the borehole groundwater monitoring installations will be preserved during the works to allow assessment of the groundwater resource over the construction works. Borehole No. 4 is overlying the high to extreme area of groundwater vulnerability at the site. It would be recommended to maintain this borehole if possible for the duration of the works if it is not under a building footprint. All installations on site should be decommissioned in accordance with best practice to ensure pollutant pathways to bedrock/aquifer are not created.

7.3.10 Hydrology Baseline/Receiving Environment

The proposed development site is located within Hydrometric Area (HA 08) which covers Nanny-Delvin. This area is located within the Eastern River Basin District (ERBD). The Nanny Delvin catchment includes the area drained by the Rivers Nanny and Delvin and by all streams entering tidal water between Mornington Point and Sea Mount, Co. Dublin, draining a total area of 711km².

The largest urban centre in the catchment is Swords approximately 18km south of Balbriggan. The other main urban centres in this catchment are Donabate, Lusk, Skerries, Balbriggan, Stamullen, Laytown, Bettystown, Duleek, Ashbourne, Ratoath and Dunshaughlin.

The total population of the catchment is approximately 159,230 with a population density of 224 people per km². The coastal part of the catchment from Balbriggan to Rush is drained by a series of small rivers including the Matt, Balcunnin and Palmerstown Rivers.

The environmental pressures present in HA08 include;

- diffuse sources such as agriculture,
- urban pressures e.g. M1 run-off,
- point sources such as Stamullen WTP and its impact on the River Delvin,
- hydromorphology – extensive network modification due to drainage schemes,
- extractive industry - A quarry has been identified as a potentially significant pressure in Delvin_020 water body. The significant issues are a combination of sediment release (clay is being stockpiled beside the water body) and organic pollution.

7.3.11 Surface Water Bodies Description & Quality

Surface water bodies that are considered to be relevant to the proposed development site include the Clonard Brook, River Delvin, River Bracken, Bremore Stream, Gormanstown Stream (tributary of Delvin) and the Northwest Irish Sea at Front Strand Beach. There are no lakes within 2km of the proposed development site.

Clonard Brook

Clonard Brook runs from west to east to the southeast of the site as depicted on the EPA mapping. It is referred to as (Clonard Brook) or Clonard Folkstown Great, EPA Code 08C27 from Boulevard Road. This is the nearest open channel watercourse to the site, but it is not on the site and is approximately 600m from the site at its nearest point across farmland..

The GSI mapping shows a historical spring to the east of Bridgefoot Road. The brook, joins the Bremore Stream and the combined watercourse discharges to the sea just north of Tankardstown Lifeboat House and the Martello Tower. Its course is a southeast to northeast flow.

River Delvin & Gormanstown Stream (Approximately 1.34km northwest of site)

The Delvin rises northwest of the village of Garristown, from which Garristown Stream joins it, and flows in a north easterly direction. It passes just north of the village of Naul, where there are cliffs of around 20 metres, a 5 metre natural fall and a small private hydro-electric plant on an artificial cascade. It then runs east of Stamullen, before crossing at Gormanston.

From there it turns in a north easterly direction and flows for about 16 kilometres before entering the Irish Sea at Knocknagin some distance north of the town of Balbriggan. The Gormanstown tributary is 1.34km to the northeast of the proposed development site's centre.

The EPA Mapping River Waterbody WFD Status 2010 – 2015 classifies the River Delvin as "poor" with "moderate" general conditions and "poor" biological and invertebrate status.

Bremore River (Approximately 630m to the east of the site)

Approximately 630m to the east of the proposed development site, on the northern edge of the town, the small Bremore River discharges to the sea just north of Baths Road. No information was held on the EPA mapping for water quality of this river.

The following two water features are greater than 2km from the site centre, but are included to provide a comprehensive picture of watercourses in the area.

River Bracken (Matt River) (>2km to the south of the site)

The River Bracken, also known as the Matt River, which flows through the town, once formed a lake known locally at "The Canal" or "Head" (of water). The water was sluiced through a canal and tunnels down to the Lower Mill where it turned a waterwheel to drive the cotton manufacturing machinery. The retaining wall of the reservoir collapsed in the 1960s and the area was reclaimed through land-fill in the

early 1980s to create a public park. No information was held on the EPA mapping for water quality of this river.

Northwest Irish Sea Balbriggan Front Strand Beach (>2km to the east of the site)

Approximately 2.3km east from the centre of the proposed development site. Sufficient quality: 2012-2015. Sufficient quality Ecoli, 95th percentile: 702 and 90th percentile: 402. Marginal sufficient status IE, 95th percentile: 210, 90th percentile: 114. If 2016 results are similar, it may remain at 'Sufficient'. Balbriggan remains extremely vulnerable to pollution from the Matt River and activities within Balbriggan harbour area. The EPA mapping states that this body of water is classified as not polluted. Further discussion of surface water quality in relation to Clonard Brook is presented in section 7.3.12 below.

7.3.12 Surface Water Environmental Analysis

A surface water sample was recovered from a drainage ditch feeding the Clonard Brook downstream of the site in October 2019 as part of the site investigation. The location of the sample point was off site and downstream. **Figure 7.11** shows the location of the surface water sample.



Figure 7.11 Surface Water Sample Location

The water sample was analysed for the following parameters;

- pH;
- Electrical Conductivity;
- Suspended Solids;
- Dissolved Oxygen;
- Ammoniacal Nitrogen;
- Arsenic, Cadmium, Chromium, Copper, Mercury, Lead, Nickel, Lead, Selenium, Zinc;
- TPH Criteria Working Group;
- PAH (USEPA 16); and
- BTEX and MTBE.

The samples were screened against the EPA's Interim Guideline Values. As discussed in section 7.3.9 these are an amalgamation of Drinking Water Standards, Environmental Quality Standards and GSI trigger values. Again EU Drinking Water Standards were utilised in the absence of parameters having a value in the aforementioned standards. The results were as follows;

- pH - 7.7 units and this is within the EPA's IGV;
- Electrical Conductivity 630uS/cm below IGV;
- Dissolved Oxygen – 9.0mg O₂/l (No standard assessed as a trend over time)
- Total Petroleum Hydrocarbons (TPH) Criteria working Group – All results at or below method of detection – No standard but BTEX analysed to assess petroleum range - see below;
- Polycyclic aromatic hydrocarbons (PAH) – All results at or below method of detection and below IGV – benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene all have IGV below the method of detection;
- Benzene, Toluene, Ethylbenzene, Xylenes, (BTEX) and Methyl-Tert-Butyl Ether (MTBE) – All results at or below the method of detection and below IGV;
- Arsenic, lead and mercury were all above method of detection; and
- All other metals were at or below method of detection limit.

The following parameters were analysed but have no IGVs – Arsenic, Boron, Cadmium, Copper, Nickel, Selenium, Zinc and Chromium Total. With the exception of those listed below all parameters were below or at the method of detection level/limit of detection (LOD). When these LODs were screened against the standards none were in exceedance of the standard.

- Arsenic – 1.7ug/l below DWS
- Selenium – 6.7ug/l below DWS
- Mercury – 0.9ug/l below DWS
- Lead - <1.0ug/l below DWS

In summary based on one surface water sample the surface water quality in Clonard Brook downstream of the site is currently of a good quality. During site works this sampling point should be assessed for suspended solids, electrical conductivity, dissolved oxygen and pH to assess and change in the baseline or impacts from the construction works. This assessment is based on water chemistry only and does not describe ecological or biodiversity conditions of the watercourse. These are discussed in chapter 5.0 Biodiversity.

7.3.13 Flood Risk

The following policy documents are pertinent to the assessment of the proposed development site in terms of flood risk;

- Fingal Development Plan 2023-2029 – *Strategic Flood Risk Assessment for the Fingal Development Plan*; and
- *The Planning system and Flood Risk Management Guidelines for Planning Authorities*, OPW & Department of Environment, Heritage & Local Government 2009.

The potential categories of flooding addressed by this assessment are coastal, fluvial, pluvial and groundwater.

It is noted from reviewing the records on the OPW's National Hazard Mapping Website that there are no records of historic flooding in the proposed development area as can be seen in **Figure 7.12**.

The flood events highlighted are outside and proposed development site and are single flood events.

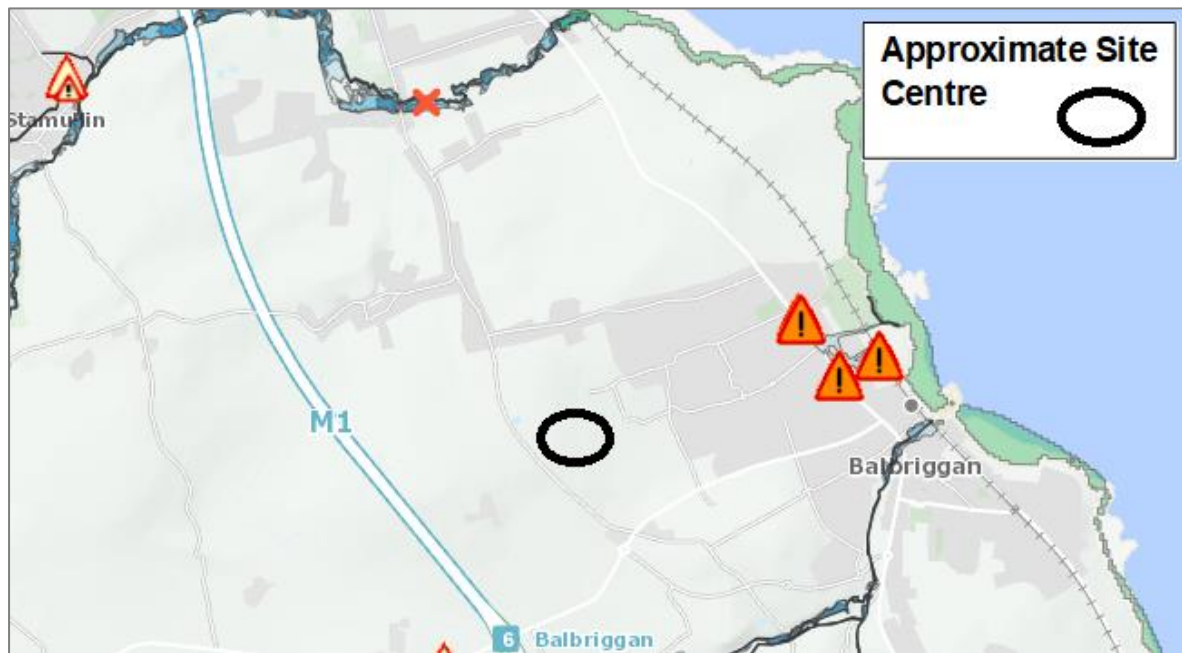


Figure 7.12 Extract from OPW's National Flood Hazard Mapping for Proposed Development Site

7.3.14 Coastal Flood Risk

The OPW Flood mapping website covers the site for coastal flood maps under Balbriggan Tile 06. These are presented in **Appendix 7.3**. This characterises the coastline along Balbriggan and medium to high coastal flood risk.

It can be seen that the proposed development site is outside of the predicted coastal flood plain. The risk from drains and streams in the area becoming a conduit for coastal flooding is low due to urbanisation resulting in culverting of open channels and the distance from the 10% AEP flood extent area. Given the absence of historic flooding at the site, it is likely that the future risk of coastal flooding impacting the site is low.

The Irish Coastal Protection Strategy Study (ICPSS) Phase 3 – Northeast Coast, OPW, June 2010 was consulted as part of this assessment but it was found that the area of Balbriggan is not covered under the 0.5% AEP coastal flood extent mapping.

Topographical data for the site indicates that ground level ranges from 30 to 70mAOD and the 1 in 200 year (0.5% AEP flood event) tidal flood event to Point No. 12 as predicted by the ICPSS is 3.49mAOD, which is significantly below the existing ground level.

7.3.15 Pluvial Flood Risk

Pluvial flooding occurs when extreme rainfall overwhelms drainage systems or soil infiltration capacity, causing excess rainwater to pond above ground at low points in topography. The National Preliminary Flood Risk Assessment Overview Report, OPW, March 2012 has been considered in this assessment. This report classifies Balbriggan and its environs as having 2No. flood events of category 2. The categories are defined as follows in **Table 7.2** below.

Category	No. of Specific Past Floods dated/undated	No. of Locations of Reported Recurring Flooding
4	10+	15+
3	5-9	10-14

2	2-4	5-9
1	1	1-4
0	0	0

Table 7.2 Categorisation of Historic Flood Risk: Extracted from the National Preliminary Flood Risk Assessment Overview Report, OPW, March 2012

It held no records of financial damage from floods in Balbriggan or its environs. It had a record for Bremore Court, Balbriggan 05/Nov/2000 where one property suffered flood damage.

It states that the flood risk index (i.e. the locations where the predictive flood risk index is greater than 150 based on fluvial and coastal flooding) for Balbriggan is 4171. It also states Balbriggan is considered as a "probably" an area for further assessment, (AFA).

Developers must address/factor in climate change when considering the impact of climate change on future pluvial flooding events. Factors to be considered include; sea level rises, river flow increases and increases in rainfall volume and intensity. As a result, basement car parking has stipulations to address flooding. Basement car parking is not proposed under this development. They must limit storm water discharge to greenfield runoff rates by use of suitable drainage and attenuation systems. The risk of pluvial flooding to the proposed development site will be mitigated by the design of the surface water drainage network.

7.3.16 Groundwater Flood Risk

Groundwater flooding can occur during lengthy periods of heavy rainfall, typically during the winter/early spring seasons when groundwater is generally high. If the groundwater level rises above the ground surface level it causes localised ponding and flooding. The GSI Groundwater flood site was examined and indicated no historical flood events related to groundwater.

7.3.17 Sensitive Features of the Receiving Environment - Groundwater Resources

Groundwater is not extensively used for industrial or residential purposes in the area. **Table 7.3** summarises the groundwater abstractions recorded on the EPA Mapping Portal and the GSI Spatial Viewer for the site and its surrounds.

No abstractions were recorded in the proposed development site but as stated in section 7.3.7 there is a well "spring" on site referred to as Lady Well. The well is currently overgrown and not in use. It is recorded as a national monument and described as a natural spring in an area of rock outcrop, with artificial enclosure, created by a ditch and bank arrangement.

The nearest abstractions are over 2km from the proposed development site and are listed below in **Table 7.3**. It is likely that they would have little impact on groundwater regime at the proposed development site.

Borehole Name	Easting	Northing	Type	Depth (m)	Location Accuracy	Use	Yield (m ³ /day)
3225NWW0003	320,120.00	263,020.00	Borehole	104.5	To 200m	Industrial	1636
2925NEW087	319,590.00	262,550.00	Borehole	51.8	To 100m	County Council	925

Table 7.3 Groundwater Abstractions Over 2km from the Site

7.3.18 Groundwater Dependent Ecological Sites

There are no SAC's, SPA's or NHA's on the proposed development site or within 2km of the site.

Northwest Irish Sea Balbriggan Front Strand Beach is over 2km from the proposed development and therefore is not expected to be impacted by it.

Refer to Chapter 5 Biodiversity for further detail.

7.3.19 Hydrological Sites

The closest river to the site is the River Bremore 630m to the east and the Clogheder Stream 220m to the east and these are not protected under national or international status. Clonard Brook is the closest open channel surface water receptor 600m to the south.

7.3.20 Classification of the Environment/Development Site

7.3.20.1 Summary of Features of Importance

The main features of importance covered on the proposed development site are summarised in Table 7.4 below.

Feature	Importance	Criteria/Justification
Bedrock aquifer classified by GSI as a "Locally Important Aquifer" which is productive only in local zones.	Medium - high	A locally important aquifer is considered to be of medium to high value on a local scale. Groundwater vulnerability for site characterises as low to extremely vulnerable.
Clonard Brook	High	Objective to maintain good water quality of this surface water receptor during construction and operation of the site – Water Framework Directive compliance
Ladys Well	Moderate	Of historical importance

Table 7.4 Summary of Features of Geological/Hydrogeological Importance

7.3.20.2 Classification of the Environment

The generic type of geological/hydrogeological environment of the proposed development site can be determined based on IGI guidelines. The generic types of geological/hydrogeological environments include;

- Type A –** Passive geological/hydrogeological environments e.g. areas of thick low permeability subsoil, areas underlain by poor aquifers, recharge areas, historically stable geological environments,
- Type B –** Naturally dynamic hydrogeological environments e.g. groundwater discharge areas, areas underlain by regionally important aquifers, nearby spring rises, areas underlain by permeable soils,
- Type C –** Man-made dynamic hydrogeological environments e.g. nearby groundwater abstractions, nearby quarrying or mining activities below the water table, nearby waste water discharges to ground, nearby geothermal systems,
- Type D –** Sensitive geological/hydrogeological environments e.g. potentially unstable geological environments, groundwater source protection zones, karst, and

Type E – Groundwater dependent eco-systems e.g. wetlands, nearby rivers with a high groundwater component base of flow.

The proposed development site is a “Type A” as it is a passive hydrogeological environment in which low permeability subsoil overlies a locally important aquifer. It could be argued that due to extreme groundwater vulnerability identified in the southwest of the site that it is characterised as a Type D environment but this has been rejected as there are no groundwater abstractions in the area for drinking water purposes.

7.4 Characteristics of the Proposed Development

Assessment and 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. The potential impact on the water environment is discussed in this chapter.

The application site area is 22.62ha (55.9 acres); (including Residential Site Area: 19.28ha (47.6 acres) & Class 1 Open Space - 2.8667ha (7.1 acres).

A full description of the proposed development is provided on Chapter 2.0 of this document. In summary the development proposals are for the construction of 564 No. residential developments mainly two storey dwellings with gardens, apartments with adjacent surface parking, access roads, public green areas and service/utilities connections including SUDs drainage systems.

7.4.1 Construction Activities

The proposed development will involve the following construction operations which have the potential to impact the hydrogeological features of importance;

- Excavation during construction to reduced level to form service routes, roads, housing and SUDs features. It is unlikely that excavations will encounter contaminated material or go below the groundwater table. Site investigation discussed in chapter 6.0 demonstrates that soil quality is good and there are no contaminants of concern within the soils that could leach to groundwater or surface waters. Groundwater and surface water quality at the site is also good. There are areas of the site that are underlain by high to extreme groundwater vulnerability. These areas need to be protected and excavation/soil stripping in these areas will need to be done in a risk adverse manner to ensure no fuels/chemicals etc. are discharged to the soils/groundwater.
- Excavation – topsoil and subsoil stripping may expose shallow weathered bedrock making the Balbriggan Groundwater Body vulnerable to pollution. Consideration will be given to phased stripping and where possible weather conditions will influence excavation. Leakages of hydrocarbons from excavation machinery. This is addressed in the mitigation section.
- Excavation and stripping of soils and poor stockpile management could give rise to run-off sediment entering Clonard Brook.
- Construction activities may impact groundwater on Lady’s well.

The well receives recharge from the high ground to the west and southwest. The groundwater is well protected by thickening subsoils. It is likely that the nearby mapped fault creates an upward pathway for groundwater and a locally more granular subsoil around the well allows egress of groundwater. The relatively low permeability subsoils provides a degree of protection from surface contamination. However, the Monument description notes that current field drains maybe discharging into the well. Any field drains encountered during topsoil stripping should be sealed or decommissioned to close off potential pollutant pathways.

- Minor pumping may be required if groundwater is encountered within excavations. This is likely to be influenced by seasonal variation as the groundwater encountered in the site investigation is perched groundwater and not reflective of aquifer levels. Excavation in summer may not encounter groundwater. Due to the topography of the site the requirement for pumping of groundwater should be low. Current design does not envisage excavation into the bedrock. If this changes as the design progresses then groundwater protection will be addressed more

comprehensively. This will be especially so for any excavation into bedrock in the high to extreme areas of groundwater vulnerability on site. Regardless of this groundwater protection measures will be enforced on site as part of the site environmental management at the construction stage.

- SUDs features to be placed with due consideration to areas of groundwater vulnerability i.e. ensuring that permeable areas do not act as a conduit for contaminants to reach sensitive water receptors. Best practice to be adhered to.

7.4.2 Operational Phase

The proposed development will consist of the following:

- (i) *The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*
- (ii) *The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35 no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:*
 - (a) *Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).*
 - (b) *Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.*
 - (c) *Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes) and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).*
 - (d) *Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8*

no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.

- (e) *Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments (6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.*

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) *the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).*
- (iv) *the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.*
- (v) *the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.*
- (vi) *a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.*

During the operational phase the proposed development area will be covered in substantially more hardstanding than present. This will reduce the infiltration area available for rainfall and could (due to sloping topography of the site) cause downstream pluvial or fluvial flooding.

SUDs drainage system could result in contaminants associated with road networks etc, e.g. hydrocarbons from vehicles to enter subsoils and groundwater and or surface water.

Leakages from failed sewer pipes could impact on groundwater quality and surface water quality.

The following assessments are required by Figure 2 Activities/Environment Matrix of the IGI Guidelines with respect to a "Type A" site;

- Lowering of groundwater tables by pumping or drainage is unlikely to be required at current proposed excavation depths except for small areas of proposed cuts from 2.5m to 3.0m

- Excavation of materials above the water table, and
- Excavation of material below the water table is unlikely to be required due to current proposed excavation depths but again is considered due to potential for changes to design.

Table 7.5 outlines the investigation required by the IGI Guidelines for a “Type A” environment which should be undertaken on the proposed development site.

Work required under activity and environment type class “A” (based on IGI Guidelines)	Details of works completed on the site at the time of writing this report
<p>Earthworks: invasive site works to characterise nature and thickness of soil and subsoil</p>	<ul style="list-style-type: none"> • 4No. Boreholes (1.2 – 4.90 depth range) and 17No. trial pits (depth range 1.5 – 3.5m) excavated to characterise soils. • Ground model is topsoil overlying glacial tills.
<p>Lowering groundwater levels by pumping or drainage:</p> <p>Establish details of borehole/spring construction or drainage system structure details (as appropriate).</p> <p>Establish sustainable yield and proposed daily abstraction rate or drainage system invert levels (as appropriate).</p> <p>Works to determine summer level of the water table, annual actual recharge and proposed maximum drawdown. Measurement of effects of change in water level on nearby abstractions.</p>	<ul style="list-style-type: none"> • Not likely to be required. Table 7.1 shows that generally groundwater readings in boreholes were dry. This was the perched groundwater table • It is unlikely that excavation depths will exceed 1.5m depth.
<p>Excavation of materials above the water table:</p> <p>Site works to characterise nature, thickness, permeability and stratification of soils and subsoils.</p> <p>Site works to fully characterise the bedrock geology and in order to define the resource volume/weight according to The PERC Reporting Standard.</p> <p>Works to determine groundwater level, flow direction and gradient; e.g. monitoring in stand pipes, piezometers, or boreholes.</p>	<ul style="list-style-type: none"> • 4.No percolation tests in accordance with BRE Digest 365. Results ranged from 2.8 to 8.5 X10⁻⁵m/min. • Groundwater flow direction assumed to be to the east as per EPA mapping. • Groundwater readings as per Table 7.1 above. Locations generally dry, but perched groundwater deemed to be between one and three metres depth. • A cut and fill assessment was carried out and concluded the Net Fill volume is 55,270 m³, which is less than the volume of imported aggregates, concrete and other hardstanding surfaces that are anticipated to be required for the construction phase of the project, hence there will be no requirement for imported fill other than construction based aggregates required for the works.

Work required under activity and environment type class “A” (based on IGI Guidelines)	Details of works completed on the site at the time of writing this report
	<ul style="list-style-type: none"> • Possible weathered bedrock encountered in trial pits. No bedrock encountered in boreholes. When the depth bedrock was encountered in the trial pits was compared to the aquifer vulnerability mapping the following was noted generally; • Areas of low vulnerability TP01 and TP02 encountered bedrock between 2.0 and 2.3m depth. • Areas of moderate vulnerability TP03, 04, 07, 09, 13, 16 & 17 encountered weathered bedrock between 1.0 and 3.0m depth • Areas of high vulnerability encountered bedrock between 0.6 and 1.3m depth. • No trial pits were excavated in the extreme vulnerability section of site.
<p>Excavation of materials below the water table:</p> <p>Site works to characterise nature, thickness, permeability and stratification of soils and subsoils.</p> <p>Site works to fully characterise the bedrock geology and in order to define the resource volume/weight according to The PERC Reporting Standard.</p> <p>Works to determine groundwater level, flow direction and gradient; e.g. monitoring in stand pipes, piezometers, or boreholes.</p> <p>Characterisation of groundwater chemistry and quality.</p> <p>If lowering of groundwater levels is required, then proceed also as for activity lowering of water levels by pumping of drainage.</p>	<p>Data as above but unlikely that excavation will go below the groundwater table. No excavation expected into bedrock.</p>

Table 7.5 Assessment Works Required for a “Type A” Environment

7.5 Potential Impacts of the Proposed Development

This section deals with the predicted impacts associated with the proposed development project before mitigation measures are applied. Both direct and indirect impacts will be considered for the construction and operational phases. These will be assessed as outlined in section 7.2.

7.5.1 Construction Phase

During this phase the following activities may cause a potential impact;

- excavation of inert soils and topsoil reducing soil cover (protection) over the aquifer;
- contamination of groundwater by site activities e.g. poorly maintained and leaking construction machines/storage vessels, tanks unbunded;
- poor housekeeping e.g. improper disposal of liquid wastes/chemicals
- construction vehicles and workers vehicles on informal parking areas with no formal drainage or petrol interceptors;
- spillages of construction chemicals to ground;
- Contamination of “Ladys” well by ingress of soiled water.
- contamination of Clonard Brook by site activities, e.g. poor stockpile management, poor earthworks programming in relation to weather conditions

7.5.1.1 Excavation of Subsoils – Aquifer Vulnerability

The stripping of topsoil and subsoils and therefore reducing the cover layer to the bedrock aquifer especially in areas classified as high to extreme groundwater vulnerability could have a negative permanent very significant indirect impact on the aquifer. The exposure of the aquifer in its self does no harm but the likelihood of contaminants entering the weathered bedrock and reaching the groundwater increases. This scenario is directly applicable to the southwest of the site, but care should be exercised across the site, since trial pits have indicated higher vulnerability than generally indicated by the GSI mapping.

7.5.1.2 Contamination of Groundwater by Site Construction Activities

Direct spillages of chemicals and fuels to subsoils can infiltrate into groundwater receptors. This would have a permanent, significant impact on groundwater quality. Currently groundwater quality at the site is based on two samples recovered and is good.

7.5.1.3 Poor Site Environmental Management during Construction

Unbunded tanks, spillages of fuels during re-fuelling, solid and or liquid wastes being allowed to enter surface waters by accident or intention can all impact long term, significantly and negatively on groundwater and surface water. This is an interactive secondary adverse impact.

7.5.1.4 Construction Roads/Haul Roads and Parking Areas

It is unlikely that haul roads and car parking areas will be covered with an impermeable material to prevent hydrocarbon or other chemical infiltration. It is also likely that during construction, drainage will be largely unmanaged and informal so the likelihood of hydrocarbons entering the soils and water receptors is highly likely. It only takes a minimal quantity of hydrocarbon to impact long term and negatively on groundwater aquifer. This is a negative significant permanent impact.

7.5.1.5 Contamination of Ladys Well

Construction activities such as soil stripping or excavation work close to Ladys well, could generate run-off that might be conveyed towards the well, via overland flow or via old land drains. The run-off could contain silt or possibly oil if not properly managed.

7.5.1.6 Contamination of Surface Waters by Site Construction - Clonard Brook Water Quality

Poor stockpile management causing sediment run-off across open farmland and creating silting and degradation of Clonard Brook. This is assessed as a secondary interactive negative permanent impact.

7.5.2 Operational Phase

7.5.2.1 Development Plan

The operational phase of the project is predicted to have a neutral, moderate long-term effect on the land soil and water. This is based on the reasoning that the development is in line with the policies of Fingal Development Plan 2023 to 2029 to provide residential development in this area. The effect is classed as moderate as it is changing the character of the environment in line with emerging baseline and existing trends i.e. the development surrounding the site.

7.5.2.2 Drainage /SUDs

The operational phase will have SUDs features that could allow infiltration of contaminants to the bedrock aquifer or surface waters if not constructed and operated in accordance with best practice. This is a permanent, negative significant impact.

7.5.2.3 Failure of Sewerage System

Pipelines for sewerage etc. could fail and cause contaminants to reach surface or groundwater receptors. This could be the result of poor maintenance or poor design. This is a permanent, negative significant impact.

7.5.3 Flood Risk as a Result of Development

In relation to flooding at the development site a flood risk assessment was carried out and the conclusions were;

- The proposed development is considered a highly vulnerable development as per Table 3.1 of the DEHLG / OPW Guidelines for Planning Authorities - "The Planning Process and Flood Risk Management" (November 2009). After an assessment of the Historical 6" and 25" mapping it can be seen that there is no record of areas "*Liable to Floods*";
- Having reviewed the available OPW Drainage District Mapping Data, no evidence of the area being included in any drainage schemes could be identified;
- A review of the benefitting lands maps ascertained that no area of the site is part of the benefitting lands;
- All recent flood events have occurred away from the site and have not impacted on the site.
- A study of the FEM FRAM maps in the Balbriggan area revealed that the site was not considered an area at risk of flooding under the FEM FRAM study;
- Following the Stage 2 - Flood Risk Assessment it is apparent that the proposed site does not have any issues with regard to flooding and is suitable for development as proposed;
- Based on the information gathered the proposed use is deemed to be a Vulnerable use. However the site is contained within a Zone C as per FEM FRAM maps;
- It has been found from the FEM FRAM maps that the site is not subject to pluvial, fluvial or tidal flooding and is a Zone C site; and
- Following the stage 2 assessment it is clear that a Stage 3 Detailed Flood Risk Assessment is not required.

Flooding at the development site is considered to be an unlikely temporary impact. However due to climate change, the topography of the site and the cumulative impact of adjacent proposed developments it is addressed in mitigation measures.

7.6 Remedial and Reductive Measures

Remedial, mitigation and avoidance measures describe any corrective or mitigation measures that are either practicable or reasonable, having regard to potential impacts. This includes avoidance, reduction and remedy measures as set out in section 4.7 of the Development Management Guidelines 2007 to reduce or eliminate any significant adverse impacts identified.

The EPA 2022 Guidelines list four established strategies for mitigation of effects;

Avoidance

Usually referring to strategic issues such the selection of alternative location or processes in order to avoid certain effects.

Prevention

Prevention usually refers to technical measures, such as putting in place measures to prevent an effect (e.g. noise) from reaching unacceptable levels.

Reduction

Reduction is a common strategy for dealing with effects that cannot be avoided, e.g. emissions. This can include measures to reduce the effect, or to reduce exposure to the effect.

Remedy/Offsetting

Remedy or offsetting is commonly used to deal with effects which cannot be prevented or reduced. An example would be replanting of trees to replace trees whose cutting was unavoidable.

7.6.1 Construction Phase

A project specific Construction Environmental Management Plan (CEMP) will be prepared and submitted to the planning authority for approval. It should address the cumulative impacts of this proposed development in conjunction to the Taylors Hill and Ladywell Phased development.

It will be maintained and the procedures implemented by the contractor for the duration of the construction period. It will manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages. All site personnel will be trained in the implementation of these procedures as part of the site induction process.

The CEMP will adhere to best practice and consider site specific issues such as;

- Permeable haul roads and car parking will be located where possible outside the zones of high and extreme groundwater vulnerability i.e. southwest of the site;
- The Clonard Brook is 600m off site and therefore no direct mitigation measures are required for the works at the proposed development site;
- Refuelling on site to be in designated area only and to be mindful of the areas of high to extreme groundwater vulnerability areas when setting up site compounds i.e. no refuelling zones/chemical storage to be in these areas;
- Earthworks operations - The construction will be phased, which allows topsoil management and soil protection from run-off as the site is stripped in stages. The use of environmental degrading or persistent chemicals to remove vegetation from the site will not be permitted. It will be managed to prevent run-off of soil sediment with diversion of clean surface water around the stockpiles.
- Good housekeeping – waste management, chemical storage and use, adequate covered car parking to ensure hydrocarbons do not leach into exposed soils from leaking vehicles etc.; double walled tanks, bunded areas and spill control systems.

- Maintenance of plant and machinery to ensure fuels and chemicals associated with these do not find their way into soils and groundwater;
- Waste Management – solid or liquid wastes not to be allowed to enter surface waters;
- Chemical and Fuel Storage - to be bunded and spill kits to be available on site. Training of operatives in their use.
- Identification and removal/blocking of any land drains leading toward Lady's well.
- Creation of soil bund or installation of silt fence in a sufficient arc to eliminate any overland flow towards Lady's well.
- The site design does not currently require slope stabilisation. In the event that this changes a specialist Geotechnical Engineer will assess any groundwater management issues.

The above protocols should be audited on a monthly basis as part of the environmental health and safety site audit carried out by the main contractor. The results of which should be provided to the local planning authority. If the above are adhered to, this will ensure that the impacts of all short term negative impacts associated with construction are imperceptible and neutral.

7.6.2 Operational Phase

Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater.

Communal landscaped areas managed by the development management company should endeavour to limit pesticide use etc. to maintain the integrity of soils.

Use of sustainable urban drainage features such as swales etc. should ensure any pathways for contaminants to groundwater are not created. Best practice has been adhered to in design.

Continuing maintenance of foul water pipelines by Irish Water or other relevant authority should minimise the potential for sewerage related contaminants to be released to subsoils and or water receptors.

Cumulative impacts of the adjacent Taylors Hill & Ladywell developments in conjunction with this one should be considered. The developments will result in the creation of an impermeable area on a hill and a reduction of area for precipitation infiltration. The impact of climate change and flash flooding on downstream receptors should be addressed. This is addressed in SUDs design to ensure adequate infiltration/retention on site during such events. Coastal flooding does not affect the site and the development is not likely to have an impact on this type of flooding. With regards to fluvial flooding it is important to maintain the natural vegetated channels of the Clonard Brook and its flood plain to ensure development does not create a fluvial flooding problem. There are plans for the Taylors Hill Phase 3 development to allow for this by maintaining a riparian buffer zone along the banks of the brook.

The Local Authority or Estate Management Team should ensure fuel interceptors etc. are maintained and that chemical use on public landscaped areas is limited.

Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater. Sustainable urban drainage such as swales etc. would alleviate the loss in infiltration area due to the increase in hardstanding.

7.7 Predicted Impact of Proposed Development

Through the implementation of measures as outlined in section 7.6 the magnitude of any impacts both from the construction and operations phases of the project are negligible. The significance of all other impacts is not significant.

7.7.1 Do Nothing Impact

In order to provide a qualitative and equitable assessment of the proposed development, this sections considers development in the context of the likely impacts upon the receiving environment should the proposed development not take place. If the proposed development does not take place then there would be no impact on groundwater or surface water quality. If the proposed development does not take place then the current permeable area for precipitation infiltration would remain unchanged.

7.7.2 Worst Case Impacts

During the groundwork's phase oil spillage could infiltrate subsoils and weathered bedrock and permanently pollute the aquifer. To prevent such an occurrence a strict adherence to the CEMP must be adopted. The high to extreme groundwater vulnerability section of the site should consider the impact of excavation and construction activities on this area e.g. not allowing refuelling in this area. The design and layout of the site infrastructure should be mindful of aquifer vulnerability classifications. Development of the site and adjacent developments could result in cumulative impact of downstream flooding due to the dramatic reduction of soil infiltration area on a sloped site. To prevent this flood water retention and flow management has been adopted in SUDs and the engineered drainage system.

7.7.3 Potential Cumulative Impacts

The cumulative effects of the proposed development on land and soils have been assessed taking into consideration other planned, existing and permitted developments in the surrounding area into account. Adjacent developments include Taylors Hill and Ladywell part of which have been completed to date and phases are yet to be completed. In addition other developments are proposed for the area but are not at the planning application stage as of yet.

With all these in mind it is predicted that that proposed development will contribute positively to the overall urban structure of Balbriggan and the Greater Dublin area in terms of provision of much needed housing development.

However, it will have a negative cumulative effect in that it reduces the permeable area of soils currently present to alleviate flooding. The SUDs and traditional hard engineering strategy for drainage should address this issue.

7.8 Monitoring

Where possible groundwater monitoring installations should be maintained for the construction period to allow monitoring of groundwater quality for the following parameters:

- Extractable Petroleum Hydrocarbons
- Ammonia
- Nitrate
- Nitrite
- Orthophosphate
- Sulphate
- Calcium
- Lead
- Nickel
- Arsenic

These installations should be decommissioned in line with best practice to ensure no permanent pathway to the aquifer is allowed to remain once the construction phase is complete.

The onsite drainage network (potable supply and foul) and suitable drainage features will be maintained and inspected on a regular basis as per the manufacturer's requirements.

7.9 Interactions

The groundwater on this site (perched groundwater) likely feeds into the Clonard Brook. The brook is not on site but it a relevant surface water receptor and ecological receptor. It is highly likely that if the perched groundwater becomes contaminated that it would impact surface water quality. If construction activities cause pollutants to be released to soils they could also leach to groundwater and surface water receptors. Construction activities will be strictly controlled to ensure best practice in relation to environmental protection.

7.10 Difficulties Encountered in Compilation

Groundwater could not be triangulated to calculate groundwater flow direction due to a number of dry readings being recorded. This was solved by the use of EPA data. See Figure 7.8.

List of Figures

Figure 7.1	Proposed Development Site
Figure 7.2	Location of Nearby Surface Water Features and Springs
Figure 7.3	Extract from GSI Mapping – Groundwater Aquifer Mapping
Figure 7.4	Location of Ladywell
Figure 7.5	Extract from GSI Mapping – Site Groundwater Vulnerability
Figure 7.6	Extract from GSI Mapping - Groundwater Recharge
Figure 7.7	IGSL 2019 Site Investigations Exploratory Hole Location Plan
Figure 7.8	EPA Groundwater Data Viewer – Groundwater Contour Mapping
Figure 7.9	Manganese Background Soil Concentration
Figure 7.10	Iron Background Soil Concentration
Figure 7.11	Surface Water Sample Location
Figure 7.12	Extract from OPW's National Flood Hazard Mapping for Proposed Development Site

List of Appendices

Appendix 7.1	Proposed Development Masterplan Drawing
Appendix 7.2	Balbriggan Groundwater Body – Summary of Initial Characterisation
Appendix 7.3	OPW Coastal Flood Map – Balbriggan Tile 06
Appendix 7.4	OPW Fluvial Flood Map – Balbriggan Tile 06

8.0 NOISE AND VIBRATION

8.1 Introduction

This chapter of the EIAR has been prepared by AWN Consulting Limited (AWN) to assess the potential noise and vibration impact of the proposed residential development in support of a planning application. The assessment considers both the short-term construction phase and the long-term operational phase on the surrounding environment. The site is located in Balbriggan, Fingal, Co. Dublin.

Mitigation measures are included, where relevant, to ensure the proposed development is constructed and operated with minimal impact on the receiving noise environment.

This chapter has been prepared by Alistair Maclaurin and Mike Simms. Alistair holds a BSc in Creative Music and Sound Technology and a Diploma in Acoustics and Noise Control. He is a member of the Institute of Acoustics (MIOA). Alistair has worked in the field of acoustics since 2012. He has been the lead noise consultant across various sites on major infrastructure projects such as Crossrail and Thames Tideway Tunnel, specialising in construction noise assessment and control. Additionally, he has undertaken various environmental noise assessments and planning reports for infrastructure, residential, commercial and other developments.

Mike Simms (Principal Acoustic Consultant) holds a BE and MEngSc in Mechanical Engineering and is a member of the Institute of Acoustics and of the Institution of Engineering and Technology. Mike has worked in the field of acoustics for more than 20 years. He has extensive experience in all aspects of environmental surveying, noise modelling and impact assessment for various sectors including, energy, industrial, commercial and residential.

8.2 Methodology

The following methodology has been prepared with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out within the relevant sections of this chapter. In addition to specific guidance documents for the assessment of noise and vibration impacts the following guidelines were considered and consulted for the purposes of this chapter:

- 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); and
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)

The study has been undertaken using the following methodology:

- Environmental noise surveys have been conducted at various locations across the site to assess the existing baseline noise environment;
- A review of the most applicable standards and guidelines has been carried out in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed to determine the noise and vibration impact on the nearest sensitive locations during the construction phase;
- Predictive calculations have been performed to determine the noise impact on the nearest noise-sensitive locations during the operational phase;

- A schedule of mitigation measures has been proposed for both the construction and operational phases to reduce, where necessary, the outward noise and vibration from the development.

8.2.1 Assessment Criteria – Construction Noise

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local Authorities typically control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

The British Standard BS 5228-1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Noise* is referenced here for the purposes of setting appropriate construction noise limits for the development. This document sets out a method whereby construction noise thresholds are determined based on ambient noise level. This method is summarised in Table 8.1.

Assessment Category and Threshold Value Period	Threshold value (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23:00 – 07:00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

- A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
- C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
- D) 19:00–23:00 weekdays, 13:00–23:00 Saturdays and 07:00–23:00 Sundays.

Table 8.1 Threshold of potential significant effect at dwellings

Ambient noise levels should be rounded to the nearest 5 dB before being compared to Category A values. This determines the appropriate category. Construction noise limits are then set according to the category definitions above. This method is commonly referred to as the 'ABC' Method.

In order to assist with interpretation of significance, Table 2.2 includes guidance as to the likely magnitude of noise impact associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of Design Manual for Roads and Bridges (DMRB), LA111 Noise and Vibration: Highways England, Transport Scotland, The Welsh Government and The Department of Infrastructure, May 2020 (DMRB 2020) and has been adapted for the purposes of this Chapter to include the relevant significance effects from the EPA Guidelines (EPA 2022a) using professional expertise and judgment.

In accordance with the DMRB Noise and Vibration construction noise and construction traffic noise impacts shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights; and
- A total number of days exceeding 40 in any six consecutive months.

The adapted DMRB Noise and Vibration guidance is used to assess the overall significance of construction noise at Noise Sensitive Locations (NSLs) across the proposed Project as shown in Table 8.2.

Construction Noise Level	Subjective Reaction	DMRB Magnitude of Impact (Long-term)	EPA Significance of Effect
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 ^{Note 1}	
Above CNT and below or equal to CNT +5dB ^{Note 2}	Moderate	Moderate to Significant	
Above CNT +5 and below or equal to CNT +15dB	Major	Significant, to Very Significant	
Above +15dB		Very Significant to Profound	

Table 8.2 Likely Impact due to Construction Noise

Note 1: CNLs at the upper end of this range will result in higher potential impacts, therefore this range is categorised as slight to moderate, acknowledging that values approaching the CNT are greater than slight. In accordance with DMRB, noise levels below the CNT are deemed 'Not Significant'.

Note 2: The DMRB does not distinguish beyond a 'Major' impact. For the purposes of distinguishing between a Very Significant and Profound Impact, CNLs exceeding the CNT by +20dB are categorised as Profound.

8.2.2 Assessment Criteria – Construction Vibration

There are two aspects to the issue of vibration that are addressed in the standards and guidelines: the risk of cosmetic or structural damage to buildings; and human perception of vibration. The following standards are referenced here in relation to cosmetic or structural damage to buildings:

- British Standard BS 5228-2: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Vibration*;
- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings. Part 2: Guide to damage levels from ground borne vibration*.

In the case of this development, vibration levels used for the purposes of evaluating building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s. BS 5228-2 and BS 7385 define the following thresholds for cosmetic damage to residential or light commercial buildings: PPV should be below 15 mm/s at 4 Hz to avoid cosmetic damage. This increases to 20 mm/s at 15 Hz and to 50 mm/s at 40 Hz and above. At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded. This is summarised in Table 8.3 below.

Table 8.3: Transient vibration guide values for cosmetic damage

Type of building range of predominant pulse	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Unreinforced or light framed structures.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above
Residential or light commercial buildings.		

Note 1: Values referred to are at the base of the building.

Note 2: At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.

Furthermore, BS 5228-2 and BS 7385 state that minor structural damage can occur at vibration magnitudes greater than twice those in Table 8.2 and major structural damage can occur at vibration magnitudes greater than four times those in Table 8.2.

BS 5228-2 also provides guidance relating to the human response to vibration. Guidance is again provided in terms of PPV in mm/s since this parameter is routinely measured when monitoring the structural effects of vibration. The potential human response at different vibration levels, as set out in BS 5228-2, is summarised in Table 8.4.

Vibration level Note A) B) C) (mm/s)	Effect
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3	Vibration might be just perceptible in residential environments.
1.0	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

A) The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient.

B) A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available.

C) Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS 6472-1 or -2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.

Table 8.4 Guidance on human response to vibration levels

8.2.3 Assessment Criteria – Operational Noise

8.2.3.1 Building Services Plant Noise

The most appropriate standard used to assess the impact of a new continuous source (i.e. plant items) to a residential environment is British Standard BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound. This standard can be used to assess the impact of a new continuous source to a residential environment and is used commonly by local authorities in their standard planning conditions and also in complaint investigations.

The method for assessing plant noise set out in BS 4142 is based on the following definitions:

“*Specific noise level, $L_{Aeq, T}$* ” is the equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T. This level has been determined with reference to manufacturers information for specific plant items;

“*Rating level, $L_{Ar, T}$* ” is the specific noise level plus adjustments for the character features of the sound (if any);

“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;

“Background noise level, $L_{A90, T}$ ” is the A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T. This level is expressed using the L_{A90} parameter. These levels were measured as part of the baseline survey.

Adjustments to the rating level are appropriate where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention. In these cases, penalties are applied of either an additional 2 dB, 4 dB or 6 dB depending on how perceptible the tone is at the noise receptor.

The background level should then be subtracted from the rating level. The greater this difference, the greater the magnitude of the impact will be, in general. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, while a difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

8.2.3.2 Deliveries and Waste Collection

In a residential development, such as the one under consideration, there is the potential for noise sources relating to deliveries and waste collection. Acceptable noise limits for these sources, both internally and externally, can be determined by referring to the British Standard BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The following guidance, summarised in Table 8.5, is provided in this standard for internal ambient noise levels in dwellings:

Activity	Location	Daytime (07:00 to 23:00hrs)	Night (23:00 to 07:00hrs)	Derived External Levels
Resting	Living room	35 dB $L_{Aeq, 16hr}$	-	50 dB $L_{Aeq, 16hr}$
Dining	Dining room	40 dB $L_{Aeq, 16hr}$	-	55 dB $L_{Aeq, 16hr}$
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$	50 dB $L_{Aeq, 16hr}$ (45 dB $L_{Aeq, 8hr}$ at night)

Table 8.5 Guidance on indoor ambient noise levels for dwellings

The derived external levels are based on the approximate attenuation provided by a partially open window of 15 dB, as advised in BS 8233, and represent the appropriate noise level at the external façade of the building. Using this value, external noise levels of 50 and 45 dB $L_{Aeq, T}$ are considered appropriate for day and night-time periods respectively. The time period for daytime noise levels has been set over a 1-hour period to provide a robust criterion. Given the higher sensitivity of people to noise at night, the time period for night-time levels is set at 15 minutes. In this instance, the following criteria relate to noise from building service plant at the nearest noise sensitive properties external to the site.

- Daytime (07:00 to 23:00hrs) 50 dB $L_{Aeq, 1hr}$
- Night-time (23:00 to 07:00hrs) 45 dB $L_{Aeq, 15min}$

These criteria are also in compliance with the following guidance taken from the World Health Organisation publication Community Noise.

“To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level should not exceed 55 dB L_{Aeq} .

At night-time outdoors, sound pressure levels should not exceed 45 dB L_{Aeq} , so that people may sleep with bedroom windows open.”

8.2.3.3 Additional Traffic on Surrounding Roads

Vehicular movement to and from the proposed development will make use of the existing road network. In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced: Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2 (UK Highways Agency et al, 2020); and Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2017). Table 8.6 relates changes in noise level to impact on human perception based on the guidance contained in these documents.

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Long-term)	EPA Significance of Effect
0	Inaudible	No impact	Imperceptible
0.1 – 2.9	Barely Perceptible	Negligible	Not significant
3 – 4.9	Perceptible	Minor	Slight, Moderate
5 – 9.9	Up to a doubling of loudness	Moderate	Significant
10+	Doubling of loudness and above	Major	Very significant

Table 8.6 Classification of magnitude of noise impacts in the long-term

8.2.4 Assessment Criteria – Operational Vibration

The development is residential in nature, therefore it is not anticipated that there will be any outward impact associated with vibration for the operational phase.

8.3 Existing Receiving Environment

Environmental noise surveys have been conducted at the site in order to quantify the existing noise environment. The surveys were conducted in general accordance with ISO 1996: 2017 *Acoustics – Description, measurement and assessment of environmental noise*.

8.3.1 Baseline Noise Survey Locations

The measurement locations were selected to represent the noise environment at noise-sensitive locations surrounding the proposed development. The selected locations are shown in Figure 8.1 and described as follows:

- N1** Attended survey location intended to capture the daytime noise environment at the residential properties to the north of the site.
- N2** Attended survey location intended to capture the daytime noise environment at the residential properties to the west of the site.
- N3** Attended survey location intended to capture the daytime noise environment at the residential properties to the east of the site.



Figure 8.1 Baseline noise survey locations

8.3.2 Survey Periods

Attended noise measurements were conducted between 10:00 and 14:00 on Tuesday 02/04/2019 and 9:49 and 13:10 on Thursday 18/05/2023.

Weather conditions during the attended survey periods were dry and sunny with no rainfall. Temperatures were between 10°C and 12°C. Wind speeds were below 5 m/s, the maximum wind speed at which the microphone windshield is effective.

8.3.3 Personnel and Instrumentation

AWN carried out the baseline noise monitoring. The following instrumentation was used in conducting the noise surveys:

Equipment	Type	Serial Number	Calibration Date
Sound Level Meter	Brüel & Kjaer 2250	2818080	23/08/2017
Sound Level Meter	Rion NL-52	186671	12/05/2022

Table 8.7 Instrumentation details

8.3.4 Noise 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_{A10} is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.

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.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{AFmin} is the instantaneous minimum sound level measured during the sample period using the 'F' time weighting.

The "A" suffix for the noise parameters 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.

8.3.5 Survey Results

The results of the attended noise are summarised in Table 8.8 to Table 8.13. It should be noted that a logarithmic average is used for the L_{Aeq} parameter, while an arithmetic average is used for the L_{A10} and L_{A90} parameters.

N1

Table 8.8: Summary of attended noise measurements at N1

Start Time	Measured Noise Levels (dB)				
	L_{Aeq}	L_{AFmax}	L_{AFmin}	L_{A10}	L_{A90}
10:34	54	78	42	55	46
11:46	54	72	43	56	46
12:52	53	70	42	54	45
Average	54	-	-	55	46

Noise contributors at this location included distant road traffic from M1 (dominant source), intermittent local road traffic (Flemington Lane), occasional aircraft and birdsong. The average noise levels at this location were measured at between 53 and 54 dB $L_{Aeq,15min}$. The background noise levels were measured at between 45 and 46 dB $L_{A90,15min}$.

N2

Table 8.9: Summary of attended noise measurements at N2

Start Time	Measured Noise Levels (dB)				
	L_{Aeq}	L_{AFmax}	L_{AFmin}	L_{A10}	L_{A90}
10:55	66	81	45	71	49
12:05	65	84	44	70	47
13:13	65	82	44	69	48
Average	66	-	-	70	48

Noise contributors at this location included distant road traffic from M1 (dominant source), intermittent local road traffic (Clonard Road, more significant than Flemington Lane), occasional aircraft and birdsong. The average noise levels at this location were measured at between 65 and 66 dB $L_{Aeq,15min}$. The background noise levels were measured at between 47 and 49 dB $L_{A90,15min}$.

N3

Table 8.10: Summary of attended noise measurements at N3

Start Time	Measured Noise Levels (dB)				
	L_{Aeq}	L_{AFmax}	L_{AFmin}	L_{A10}	L_{A90}
11:19	49	64	43	52	45
12:27	46	56	41	48	43
13:36	47	64	40	50	42
Average	48	-	-	50	43

Noise contributors at this location included distant road traffic from M1 (faint), occasional aircraft, typical residential sources and birdsong. The average noise levels at this location were measured at between 46 and 49 dB $L_{Aeq,15min}$. The background noise levels were measured at between 42 and 45 dB $L_{A90,15min}$.

N4

Table 8.11: Summary of attended noise measurements at N4

Start Time	Measured Noise Levels (dB)				
	L_{Aeq}	L_{AFmax}	L_{AFmin}	L_{A10}	L_{A90}
09:49	52	70	37	53	40
10:58	53	70	39	55	42
12:04	54	70	38	56	42
Average	53	-	-	55	41

Noise contributors at this location included distant road traffic from M1 (faint), occasional aircraft, occasional local road traffic, typical residential sources and birdsong. The average noise levels at this location were measured at between 52 and 54 dB $L_{Aeq,15min}$. The background noise levels were measured at between 40 and 42 dB $L_{A90,15min}$.

N5

Table 8.12: Summary of attended noise measurements at N5

Start Time	Measured Noise Levels (dB)				
	L_{Aeq}	L_{AFmax}	L_{AFmin}	L_{A10}	L_{A90}
10:10	64	91	43	67	46
11:19	61	76	45	64	47
12:24	62	79	45	63	47
Average	63	-	-	65	47

Noise contributors at this location included distant road traffic from M1 (faint) and local road traffic. The average noise levels at this location were measured at between 61 and 64 dB $L_{Aeq,15min}$. The background noise levels were measured at between 46 and 47 dB $L_{A90,15min}$.

N6**Table 8.13: Summary of attended noise measurements at N6**

Start Time	Measured Noise Levels (dB)				
	L _{Aeq}	L _{AFmax}	L _{AFmin}	L _{A10}	L _{A90}
10:34	47	77	38	47	41
11:41	44	61	39	46	41
12:46	45	61	39	46	42
Average	46	-	-	46	41

Noise contributors at this location included distant road traffic from M1 (faint), occasional local road traffic and other typical residential sources. The average noise levels at this location were measured at between 44 and 47 dB L_{Aeq,15min}. The background noise levels were measured at between 41 and 42 dB L_{A90,15min}.

8.4 Characteristics of the Proposed Development

This site is located in Balbriggan, Fingal, Co. Dublin. The site is bound to the north by Flemington Lane and to the west by Clonard Road. The proposed development comprises 564 dwelling units, consisting of 378 house, 84 duplex units and 102 apartments. There are 9 commercial units also proposed in addition to the construction of access routes.

The proposed development is described in further detail in Chapter 3 (Description of the Proposed Development).

8.5 Potential Impact of the Proposed Development**8.5.1 Construction Noise**

The largest noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery and HGV movement to, from and around the site. However, the construction phase can be classed as a short-term phase (approximately three years in duration).

The nearest noise-sensitive locations to the site are the residential properties to the east, the nearest of which is 10 m from the closest point of the site boundary. Based on the results of the baseline noise surveys undertaken, the ambient daytime noise level at these properties was found to be between 47 and 49 dB L_{Aeq,T}.

Thresholds for significant noise from construction can be determined by referring to Table 8.1 (BS 5228-1) and the baseline ambient noise levels, as outlined in the assessment criteria section.

The daytime significance threshold for construction noise at the site is set at 65 dB L_{Aeq,T}.

A night-time threshold is not included as construction work will not be taking place at night.

BS 5228-1 contains noise level data for various construction machinery. The noise levels relating to site clearance, ground excavation and loading lorries (dozers, tracked excavators and wheeled loaders) reach a maximum of 81 dB L_{Aeq,T} at a distance of 10 m. For this assessment, a worst-case scenario is assumed of 3 no. such items with a sound pressure level (SPL) of 81 dB at 10 m operating simultaneously along the closest works boundary. This would result in a total noise level of 86 dB at 10 m and an equivalent combined sound power level of 114 dB L_w(A). This worst-case scenario is the typical assumption made for developments of this size, on the basis that it is unlikely that more than 3 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other.

Guidance on the approximate attenuation achieved by barriers surrounding the site is also provided in BS 5228-1. It states that when the top of the plant is just visible to the receiver over the noise barrier, an approximate attenuation of 5 dB can be assumed, while a 10 dB attenuation can be assumed when the noise screen completely hides the sources from the receiver.

The latter scenario can be assumed in this case due to the proximity of the noise-sensitive locations, i.e. a barrier height will be chosen so as to completely hide the source. Table 8.14 shows the potential noise levels calculated at various distances based on the assumed sound power level and attenuation provided by the barrier of 10 dB.

Description of Noise Source	Sound Power Level (dB L _w (A))	Calculated noise levels at varying distances (dB L _{Aeq,T})				
		10	20	30	50	100
3 no. items each with SPL of 81 dB at 10 m operating simultaneously.	114	76	70	66	62	56

Table 8.14 Potential construction noise levels at varying distances assuming attenuation of 10 dB from site barrier

The calculated noise levels in Table 8.14 show that there is potential for the maximum permissible daytime noise level to be exceeded at distances up to 30 m from the works. This indicates that additional mitigation measures will be required to prevent likely significant impacts at the residential properties to the east. These measures are detailed in Section 8.6.

Based on this assessment, the potential impact due to construction noise within 30 m of the works is considered to be temporary, negative and significant to very significant. Beyond 30 m from the works, the impact is considered to be short-term, negative and slight to moderate. It should be noted that due to the size of the site, typically work will be undertaken at distances greater than 30m from residential locations, hence, it is expected that typically the construction work will generate a negative, slight to moderate, short-term effect.

Chapter 11 *Material Assets – Transport* predicts that peak construction traffic will consist of 80 HGV trips and 160 car/van trips per day, a total of 240 trips resulting in an increase of approximately 1.8% on Clonard Road which is adjacent to the proposed site entrance.

The Transport Infrastructure Ireland document '*Traffic and Transport Assessment Guidelines*' states that the impact of any proposed development on the local road network is considered material when the level of traffic it generates increases flows by more than 10% on normal networks or 5% on congested networks. Both Clonard Road and Boulevard Road are considered to be normal networks and therefore the flow increase during the construction phase is not considered material. From a noise perspective this level of increase to traffic flow would result in an imperceptible increase in noise.

8.5.2 Construction Vibration

In terms of the potential vibration impact during the construction phase, site activities will be managed so as not to exceed the vibration limits set out in British Standard BS 5228-2 and summarised in Table 8.2 of this report. Furthermore, the mitigation measures set out in Section 8.6 of this report will be employed to further reduce the likelihood of significant effects.

8.5.3 Operational Noise

The main potential sources of outward noise from the development during the operational phase will be traffic flows to and from the development via public roads, mechanical and electrical plant used to

service the buildings, and deliveries and waste collection. The review of standards and guidelines in Section 8.3 will be used here to assess the potential impact of the proposed development during the operational phase

Building Services Plant Noise

BS 4142: 2014: *Methods for Rating and Assessing Industrial and Commercial Sound* sets out a method for assessing the impact of a new continuous noise source to a residential environment such as plant items used to service the apartments and amenity areas. Residential units are the most sensitive to this source, therefore, control of impacts at these units ensures control elsewhere. It states that if the rating level of the item exceeds the background noise level by 5 dB, an adverse impact is likely to occur, while an exceedance of 10 dB is likely to cause a significant adverse impact, depending on the context.

The background noise level at the boundaries of the site were determined through baseline noise surveys. Background noise levels were in the range 42 to 49 dB $L_{A90,15min}$.

Based on the above, it is recommended that cumulative plant noise from mechanical plant associated with the development does not exceed 40 dB $L_{Aeq,15min}$ and does not contain audible tones at any noise sensitive locations.

The location or type of building services plant has not yet been established, therefore it is not possible to calculate the potential noise levels. In this instance, it is best practice to use the above guidance (BS 4142) to inform the detailed design during the selection and layout of building services for the development.

Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself. Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, then once the relevant noise criteria is achieved within the development it is expected that there will be no negative impact at sensitive receivers off site.

Deliveries and Waste Collection

Section 5.2 of the Traffic and Transport Assessment Report indicates that 119 visitor parking spaces will be provided in the proposed development. These spaces may be used to facilitate deliveries to residences within the development.

Waste collection from the apartment buildings within the proposed development will be organised and facilitated by the management company responsible for the upkeep of the proposed development's communal areas. Waste collection from the dwelling houses within the proposed development will be the responsibility of the individual householders who will engage an authorised waste collector for this purpose. As such, waste collection will follow a similar pattern to that of the existing surrounding area (e.g. weekly collections) and is not expected to result in a significant noise impact.

Due to the expected frequency of waste collection and deliveries to the proposed development, based on the number of residents, and since the proposed development has been designed to accommodate these services, deliveries and waste collection will not result in a significant noise impact on the surrounding area.

It's noted that there are several plots within the development available for commercial enterprises. During the design stage these plots will be designed so that the noise impact from deliveries will be not significant on local receptors, this may be through a combination of measures such as screening and location of delivery spaces.

Additional Traffic on Surrounding Roads

The Mobility Management Plan for the proposed development sets out its main objective as follows:

'Seek to minimise the number of single occupancy private vehicle journeys made to and from the housing development, to promote travel by more sustainable modes of transport, and to manage the overall transport impacts of the development.'

The Traffic Impact Assessment predicts the following changes to Annual Average Daily Traffic (AADT) in the opening year (2025). This is shown in Table 8.15 along with approximate corresponding changes to noise level. Note that all figures take account of committed developments in the area.

Road Link	24 Hour AADT for Opening Year (2025)		
	Without Development	With Development	Increase
The Park (S)	4100	4560	11% (+0.5 dB)
Hamlet Lane (W)	3462	4075	18% (+0.7 dB)
Morlaragh Road	3385	3845	14% (+0.6 dB)
Boulevard Road	4159	6610	59% (+2.0 dB)
Naul Road (W)	10640	12393	16% (+0.7 dB)
Clonard Road (E)	9113	10867	19% (+0.8 dB)

Table 8.15 Predicted changes to AADT with and without the development in place

As explained in Section 8.3 above, an increase in noise level of less than 3 dB is considered negligible and not significant. As already set out above, a 3 dB increase in noise level would require approximately a doubling of traffic volumes. Based on these small increases to AADT it is considered that the impact from additional traffic on surrounding roads as a result of the proposed development will be not significant.

8.5.4 Do Nothing

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts will not occur. Impacts from increased traffic volumes also not occur. The local noise and vibration levels at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of noise and vibration.

8.5.5 Cumulative Impacts

8.5.5.1 Construction Phase

Due to the proximity and adjacency of other construction projects within the area there is the potential for cumulative effects should projects proceed simultaneously. Elevated construction noise emissions due to cumulative noise are likely to occur at receptor locations proximate to two or more construction sites as well as a potential increase in the length of time that the receptor will be exposed to construction noise. Hence, cumulative construction impacts will need to be considered and managed during the construction phase. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be negative, significant and short-term at receptors proximate to two or more construction sites (e.g. within 30m – 40m of a site), for those further away the impacts will be slight to moderate and short-term.

8.5.5.2 Operational Phase

Preliminary review of cumulative increases in road traffic indicate that there is a potential significant increase in noise level on two routes, Taylor's Hill Way and Boulevard Road. For these roads a more detailed assessment has been undertaken with calculations as follows.

The noise level associated with an event of short duration, such as a passing vehicle movement, may be expressed in terms of its Sound Exposure Level (L_{AX}). The Sound Exposure Level can be used to calculate the contribution of an event or series of events to the overall noise level in a given period.

The appropriate formula is given below:

$$L_{Aeq,T} = L_{AX} + 10\log_{10}(N) - 10\log_{10}(T) + 10\log_{10}(r_1/r_2) \quad \text{dB}$$

where:

$L_{Aeq,T}$ is the equivalent continuous sound level over the time period T (in seconds);
 L_{AX} is the "A-weighted" Sound Exposure Level of the event considered (dB);
 N is the number of events over the course of time period T;
 r_1 is the distance at which L_{AX} is expressed;
 r_2 is the distance to the assessment location.

The assumed mean value of Sound Exposure Level for cars and HGV's is in the order of 73 dB L_{AX} and 88 dB L_{AX} respectively at a distance of 5 metres. These values have been used to calculate the noise levels as a result of the baseline traffic in isolation and the cumulative road traffic.

The results of these calculations are presented in Table 8.12.

Road Link	24 Hour AADT for Opening Year (2025)			
	Noise Prediction Without Developments	Cumulative Prediction	Noise	Increase
Boulevard Road	56	60		+4 dB
Taylor's Hill Way	39	50		+11 dB

Table 8.16 Predicted cumulative increases in road traffic noise at 5m distance from road

The results indicate that a negative, slight to moderate, long-term effect will occur on receptors located along Boulevard Road. At Taylor's Hill Way a negative, significant and long-term effect is predicted for receptors located along the road, however, this effect should be considered in context with the overall predicted noise level of 50 dB which is considered to be a desirable noise level in the Fingal County Noise Action Plan, hence the properties along this route will experience a significant increase in noise level, however overall noise levels are predicted to remain within the desirable range.

8.6 Remedial and Mitigation Measures

8.6.1 Construction Phase

In Section 8.5.1, a likely significant impact was identified at the residential properties to the east of the proposed development. The following measures will be employed to mitigate this. These measures are also best practice regardless of identified significant impacts.

BS 5228-1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites Parts 1 and 2* provide guidance on noise and vibration control in the context of construction. The control of noise from construction works can be divided into two categories:

- Controlling the noise at source, and;
- Controlling the spread of noise.

Mitigation measures that will be employed in order to control construction noise at its source include the following:

- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials;
- Start up plant and vehicles sequentially rather than all together;
- The normal operating hours of the site will be adhered to. This also applies to the movement of plant onto and around the site;
- The plant and activities chosen to carry out the construction work will be the quietest available means of achieving the required purpose;
- Modifications may be made to plant and equipment, if appropriate, for noise attenuation purposes, provided the manufacturer has been consulted. For example, a more effective exhaust silencer may be fitted to a diesel engine;
- As far as is reasonably practicable, sources of significant noise will be enclosed provided that ventilation and potential hazards to operators have been considered;
- Plant and noisy activities will be located away from noise-sensitive areas where practicable and sources of directional noise should be oriented away from noise-sensitive areas;
- All plant and equipment will be regularly maintained (increases in plant noise are often indicative of future mechanical failure).

Mitigation measures that will be employed in order to control the spread of construction noise include the following:

- The distance between noise sources and noise-sensitive areas will be increased as much as is reasonably practicable;
- Where noise control at source is insufficient and the distance between source and receiver is restricted, screening will be implemented. The location of barriers providing screening is an important consideration. Barriers will be located either close to the source of noise (as with stationary plant) or close to the listener. The height of the barrier must also be considered. BS5228-1 states that an approximate attenuation of 5 dB is achieved when the top of the plant is just visible to the receiver over the noise barrier, while an attenuation of 10 dB is achieved when the noise screen completely hides the sources from the receiver. A barrier height will be chosen so as to completely hide the source. Furthermore, where the noise source is 1 m from the façade of a building, an allowance of +3 dB will be made for reflection.

Mitigation measures that will be employed in order to control vibration from construction works, with reference to BS 5228-2, include the following:

- The plant and activities chosen to carry out the construction work will be chosen to cause as little vibration as possible while achieving the required purpose;
- All plant and equipment will be regularly maintained to reduce unnecessary vibration;
- Activities causing significant vibration will be located away from sensitive areas and/or isolated using resilient mountings where practicable.

8.6.2 Operational Phase

Building Services Plant Noise

At the detailed design stage, best practice measures relating to building services plant will be taken to ensure there is no significant noise impact on noise-sensitive locations within the development. Due to the relative proximity of the NSLs within the development, this will also prevent a negative impact on NSLs in the surrounding area. Best practice measures in this context include the following:

- Where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required, to reduce noise breakout;
- Ventilation plant serving plant rooms and car parks will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment;
- The use of perimeter plant screens will be used, where required, for roof-top plant areas to screen noise sources;
- The use of attenuators or silencers will be installed on external air-handling plant;
- All mechanical plant items, e.g. fans, pumps etc., shall be regularly maintained to ensure that excessive noise generated by 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;
- Installed plant will have no tonal or impulsive characteristics when in operation.

Deliveries and Waste Collection

Based on the assessment in Section 8.5.3, it is not expected that deliveries and waste collections are likely to cause a significant impact. Therefore, no mitigation measures are necessary in this case.

Additional Traffic on Surrounding Roads

As explained in Section 8.5.2, it is considered that the changes to traffic flows for this development will not result in a significant increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case.

8.7 Residual Impact of the Proposed Development

Provided that the relevant mitigation measures are employed during the construction phase, it is anticipated that impacts will be short-term, negative and moderate.

Residual impacts during the operational phase are anticipated to be long-term, neutral and imperceptible.

8.8 References

- BS 5228-1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise.
- BS 5228-2: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Vibration.
- BS 7385: 1993: Evaluation and measurement for vibration in buildings. Part 2: Guide to damage levels from ground borne vibration.

- BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound.
- BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings.
- Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2. UK Highways Agency et al. 2020.
- EPA Guidelines on the Information to be contained in Environmental Impact Statements, (EPA, 2022);
- ISO 1996: 2017 Acoustics – Description, measurement and assessment of environmental noise.
- Transportation Assessment Report for Malincross Proposed Residential Development. MPA Consulting Engineers. 2021.
- Mobility Management Plan for Malincross Proposed Residential Development. MPA Consulting Engineers. 2021.
- Traffic Impact Assessment for Malincross Proposed Residential Development. MPA Consulting Engineers. 2021.

9.0 AIR QUALITY

9.1 Introduction

This chapter assesses the likely impacts to air quality associated with the proposed development at Flemington Lane, Balbriggan, Co. Dublin. A full description of the development is available in Chapter 3.

This chapter was completed by Ciara Nolan, a senior environmental consultant in the air quality and climate section of AWN Consulting Ltd. She holds an MSc. (First Class) in Environmental Science from University College Dublin and has also completed a BSc. Eng. in Energy Systems Engineering. She is a Member of both the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Science (MIEnvSc). She has over 6 years' of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for numerous developments including residential, industrial, commercial, pharmaceutical and data center.

9.2 Methodology

9.2.1 Criteria for Rating of Impacts

9.2.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, National and European statutory bodies have set limit values for a range of air pollutants in ambient air. These limit values or "Air Quality Standards" are health-based or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2022 which incorporate European Commission Directive 2008/50/EC which has set limit values for a number of pollutants. The limit values for NO₂, PM₁₀ and PM_{2.5} are relevant to this assessment (see Table 9.1). Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC).

Pollutant	Regulation ^{Note 1}	Limit Type	Value
Dust Deposition	TA Luft (German VDI 2002)	Annual average limit for nuisance dust	350 mg/(m ² *day)
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m ³
		Annual limit for protection of human health	40 µg/m ³
Particulate Matter (as PM ₁₀)	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m ³ PM ₁₀
		Annual limit for protection of human health	40 µg/m ³ PM ₁₀
Particulate Matter (as PM _{2.5}) Stage 1	2008/50/EC	Annual limit for protection of human health	25 µg/m ³ PM _{2.5}
Particulate Matter (as PM _{2.5}) Stage 2 ^{Note 2}	2008/50/EC	Annual limit for protection of human health	20 µg/m ³ PM _{2.5}

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 2 Stage 2 indicative limit value for PM_{2.5} to be applied from 1 January 2020 after review by the European Commission

Table 9.1 Ambient Air Quality Standards

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 9.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final PM_{2.5} target of 5 µg/m³. The strategy also acknowledges that “meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both PM_{2.5} and NO₂”. Ireland will revise its air quality legislation in line with the proposed EU revisions to the CAFE Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets.

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO ₂	WHO Air Quality Guidelines	24-hour limit for protection of human health	50µg/m ³ NO ₂	50µg/m ³ NO ₂	25µg/m ³ NO ₂
		Annual limit for protection of human health	30µg/ m ³ NO ₂	20µg/ m ³ NO ₂	10µg/m ³ NO ₂
PM (as PM ₁₀)		24-hour limit for protection of human health	75µg/ m ³ PM ₁₀	50µg/m ³ PM ₁₀	45µg/m ³ PM ₁₀
		Annual limit for protection of human health	30µg/ m ³ PM ₁₀	20µg/ m ³ PM ₁₀	15µg/m ³ PM ₁₀
PM (as PM _{2.5})		24-hour limit for protection of human health	37.5µg/m ³ PM _{2.5}	25µg/m ³ PM _{2.5}	15µg/m ³ PM _{2.5}
		Annual limit for protection of human health	15µg/m ³ PM _{2.5}	10µg/m ³ PM _{2.5}	5µg/m ³ PM _{2.5}

Table 9.2 WHO Air Quality Guidelines

9.2.1.2 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 section 9.2.1.1 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 Bergerhoff 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.

9.2.2 Construction Phase

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order 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 (2014) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Construction phase traffic also has the potential to impact air quality and climate. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being ‘affected’ by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

The construction stage traffic will not increase by 1,000 AADT, 200 HDV AADT, 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.

9.2.3 Operational Phase

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 9.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. The proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on a number of road links. Therefore, a detailed air dispersion modelling assessment of operational phase traffic emissions was conducted.

The impact to air quality as a result of changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (2022a) states a proportionate number of representative receptors which are located in areas which will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling. The TII criteria state that receptors within 200m of impacted road links should be assessed; roads which are greater than 200m from receptors will not impact pollutant concentrations at that receptor. The TII guidance (2022a) defines sensitive receptor locations as: residential housing, schools, hospitals, places of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present. A total of 3 no. high sensitivity residential receptors (R1 – R3) were included in the modelling assessment (see Figure 9.1).

The TII guidance (2022a) states that modelling should be conducted for NO₂, PM₁₀ and PM_{2.5} for the base, opening and design years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO₂, PM₁₀ and PM_{2.5} concentrations has been conducted for the Do Nothing

and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2022b).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2022b). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM₁₀ emissions associated with brake and tyre wear (TII, 2022b). 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 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 9.3 below. These criteria have been adopted for the proposed development to predict the impact of NO₂ and PM₁₀ emissions as a result of the proposed development.

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

Table 9.3 Air Quality Significance Criteria

Traffic Data Used in Modelling Assessment

Traffic flow information was obtained from MPA Consulting Engineers for the purposes of this assessment. Data for the Base Year 2022 and the Do Nothing and Do Something scenarios for the Opening Year 2025 and Design Year 2040 were provided. Specific cumulative developments have also been included in the traffic data for the assessment. These developments include committed developments Taylors Hill Phase 1 (Planning Ref. F15A/0437) and Phase 2 (Planning Ref. F15A/0550) and Ladyswell (Planning Ref. (F21A/0055). Traffic associated with a number of schools in the area that are not currently at full capacity was also included. Further details of the committed developments can be found in the Traffic and Transport Assessment prepared by MPA Consulting Engineers and submitted with this planning application.

The traffic data is detailed in Table 9.4. Only road links that met the TII scoping criteria and that were within 200m of receptors were included in the modelling assessment. Background concentrations have been included as per Section 9.3.2 of this chapter based on available EPA background monitoring data (EPA, 2022). 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)
4A Clonard Road West	40	16,626 (482)	17,298 (526)	19,051 (526)	19,048 (658)	20,802 (658)
4B Boulevard Road	50	4,022 (90)	4,062 (98)	6,513 (98)	4,164 (122)	6,615 (122)
7C Clonard Rd (E)	50	8,419 (389)	8,689 (424)	1,444 (424)	9,393 (531)	11,147 (531)

Table 9.4 Traffic Data used in Operational Phase Air Modelling Assessment



Figure 9.1 Location of Sensitive Receptors used in Operational Phase Air Quality Assessment

9.3 Receiving Environment

9.3.1 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. 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 10 km north of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 9.2). For data collated during five representative years (2018 - 2022), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.5 m/s over the period 1981 - 2010 (Met Eireann, 2023).

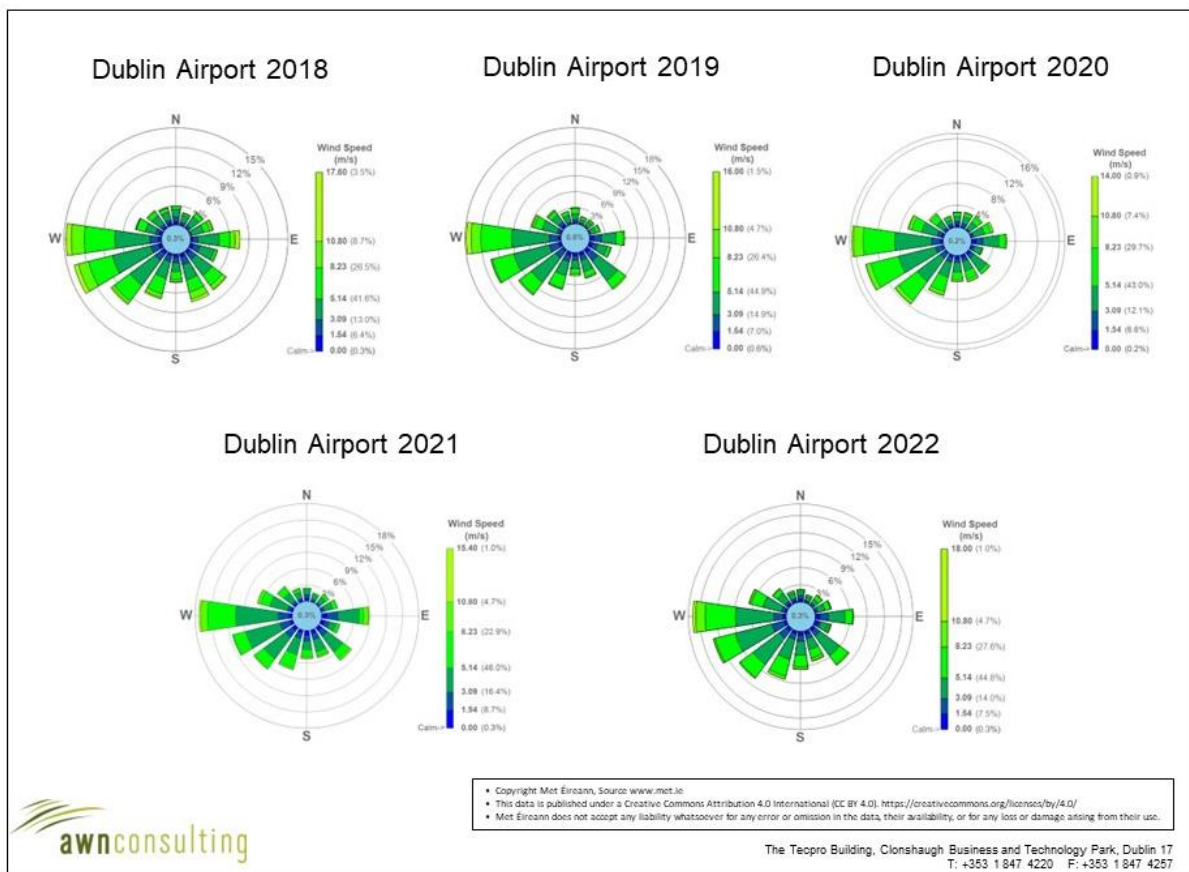


Figure 9.2 Dublin Airport Windrose 2018 – 2022 (Met Eireann, 2023)

9.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent EPA published annual report on air quality “Air Quality In Ireland 2021” (EPA 2022) details the range and scope of monitoring undertaken throughout Ireland.

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones have been defined in Ireland for air quality management and assessment purposes as outlined within the EPA document titled 'Air Quality In Ireland 2021' (EPA 2022). 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, the area of the proposed development in Balbriggan is categorised as Zone C.

In 2020 the EPA reported (EPA, 2021) that Ireland was compliant with EU legal air quality limits at all locations, however, this was largely due to the reduction in traffic due to Covid-19 restrictions. The EPA *Air Quality in Ireland 2020* report details the effect that the Covid-19 restrictions had on air monitoring stations, which included reductions of up to 50% at some monitoring stations which have traffic as a dominant source. The report also notes that CSO figures show that while traffic volumes are still slightly below 2019 levels, they have significantly increased since 2020 levels. 2020 concentrations are therefore predicted to be an exceptional year and not consistent with long-term trends. For this reason, they have been included in the baseline section for representative purposes only and previous long-term data has been used to determine baseline levels of pollutants in the vicinity of the proposed development.

NO₂

Long-term NO₂ monitoring was carried out at the Zone C locations of Kilkenny, Portlaoise and Dundalk for the period 2017 - 2021 (EPA, 2022). Long term average concentrations are significantly below the annual average limit of 40 µg/m³. Average results range from 4 – 14 µg/m³ (Table 9.5). The NO₂ annual average for this five-year period suggests an upper average limit of no more than 12 µg/m³ as a background concentration for the Zone C locations. Based on the above information a conservative estimate of the current background NO₂ concentration for the region of the proposed development is 14 µg/m³.

Station	Averaging Period ^{Notes 1,2}	Year				
		2017	2018	2019	2020	2021
Kilkenny	Annual Mean NO ₂ (µg/m ³)	5	6	5	4	4
	99.8 th %ile 1-hr NO ₂ (µg/m ³)	41	45	42	40	35
Portlaoise	Annual Mean NO ₂ (µg/m ³)	11	11	11	11	8
	99.8 th %ile 1-hr NO ₂ (µg/m ³)	60	68	60	52	49
Dundalk	Annual Mean NO ₂ (µg/m ³)	-	14	12	10	11
	99.8 th %ile 1-hr NO ₂ (µg/m ³)	-	-	69	73	67

Note 1 Annual average limit value of 40 µg/m³ and hourly limit value of 200 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

Table 9.5 Background NO₂ Concentrations In Zone C Locations (µg/m³)

PM₁₀

Continuous PM₁₀ monitoring was carried out at the Zone C locations of Galway, Ennis, Portlaoise and Dundalk from 2017 - 2021. These showed an upper average limit of no more than 20 µg/m³ (Table 9.6). Levels range from 10 – 20 µg/m³ over the five year period with at most 17 exceedances of the 24-hour limit value of 50 µg/m³ in Ennis in 2021 (35 exceedances are permitted per year) (EPA, 2022). Based on the EPA data, a conservative estimate of the current background PM₁₀ concentration in the region of the proposed development is 15 µg/m³.

Station	Averaging Period ^{Notes 1,2}	Year				
		2017	2018	2019	2020	2021
Galway	Annual Mean PM ₁₀ (µg/m ³)	-	15	13	13	11
	24-hr Mean > 50 µg/m ³ (days)	-	0	1	1	0
Ennis	Annual Mean PM ₁₀ (µg/m ³)	16	16	18	20	19
	24-hr Mean > 50 µg/m ³ (days)	9	4	12	19	17
Portlaoise	Annual Mean PM ₁₀ (µg/m ³)	10	11	15	12	11
	24-hr Mean > 50 µg/m ³ (days)	0	1	0	0	1
Dundalk	Annual Mean PM ₁₀ (µg/m ³)	-	15	14	13	12
	24-hr Mean > 50 µg/m ³ (days)	-	0	2	2	0

Note 1 Annual average limit value of 40 µg/m³ and 24-hour limit value of 50 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

Table 9.6 Background PM₁₀ Concentrations In Zone C Locations (µg/m³)

PM_{2.5}

Monitoring of both PM₁₀ and PM_{2.5} takes place at the station in Ennis which allows for the PM_{2.5}/PM₁₀ ratio to be calculated. Average PM_{2.5} levels in Ennis over the period 2017 - 2021 ranged from 10 - 15 µg/m³, with a PM_{2.5}/PM₁₀ ratio ranging from 0.63 – 0.78 (EPA, 2021). Based on this information, a conservative ratio of 0.8 was used to generate an existing PM_{2.5} concentration in the region of the development of 12 µg/m³.

Based on the above information the air quality in Zone C locations is generally good, with concentrations of the key pollutants generally well below the relevant limit values. However, the EPA have indicated that road transport emissions are contributing to increased levels of NO₂ with the potential for breaches in the annual NO₂ limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM₁₀ and PM_{2.5}). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2022).

The current background concentrations have been used in the operational phase air quality assessment for both the Opening Year and Design Year as a conservative approach in order to predict pollutant concentrations in future years. This is in line with the TII methodology (TII, 2022a).

9.3.3 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014) prior to assessing the impact of dust from a proposed development the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are areas where people are present for short periods or where the public would not expect a high level of amenity.

In terms of receptor sensitivity to dust soiling, there are more than 100 no. high sensitivity residential properties within 20 m of the proposed development site boundary (see Figure 9.3). Therefore, the overall sensitivity of the area to dust soiling impacts is considered high based on the IAQM criteria outlined in Table 9.7.

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 9.7 Sensitivity of the Area to Dust Soiling Effects on People and Property

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 15 µg/m³. There are over 100 no. residential properties within 20 m of the proposed development boundary (see Figure 9.3). Based on the IAQM criteria outlined in Table 9.8, the worst-case sensitivity of the area to human health is considered medium.

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)				
			<20	<50	<100	<200	<350
High	< 24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	< 24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	< 24 µg/m ³	>1	Low	Low	Low	Low	Low

Table 9.8 Sensitivity of the Area to Dust Related Human Health Impacts

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 500m for the site entrance. There are no designated ecological sites within 50m of the site or 500m of the site entrance. Therefore, there is no potential for impacts.

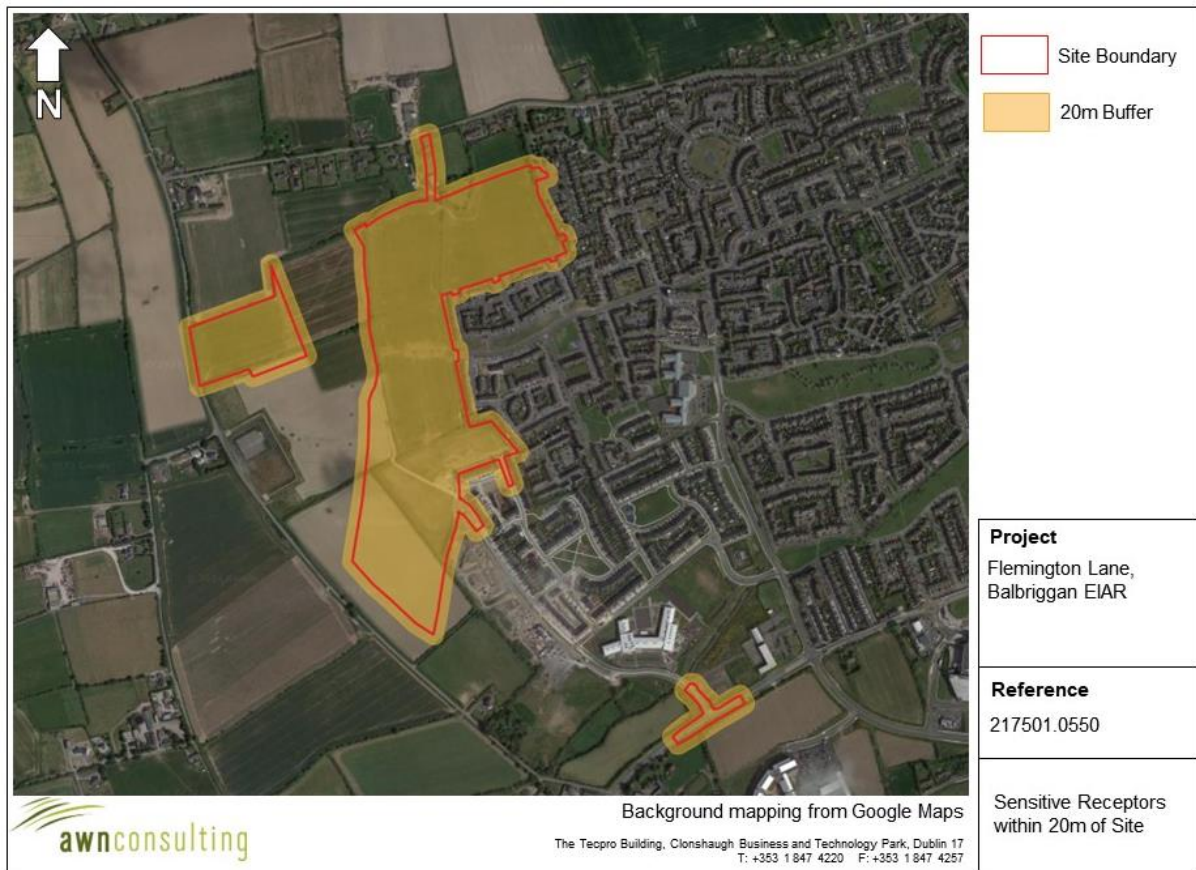


Figure 9.2 Sensitive Receptors within 20m of Site Boundary

9.4 Characteristics Of The Proposed Development

The proposed development is located at Flemington Lane, Balbriggan, Co. Dublin. A full description of the development is available in Chapter 3. Impacts to air quality can occur during both the construction and operational stages.

During the construction stage, the main source of air quality impacts will be as a result of fugitive dust emissions from site activities. The primary sources of air emissions in the operational context are deemed long term and will involve the change in traffic flows in the local areas which are associated with the development. The following describes the primary sources of potential air quality impacts which have been assessed as part of this EIAR.

9.5 Potential Impact Of The Proposed Development

9.5.1 Construction Phase

9.5.1.1 Dust Impacts

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350 m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. 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 (see Section 9.3.1) indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature. In addition,

dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Dublin Airport indicates that on average 191 days per year have rainfall over 0.2 mm (Met Eireann, 2023). Therefore, it can be determined that over 50% of the time dust generation will be reduced.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 8.3.3). As per Section 8.2.2 the major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

Demolition

Demolition will primarily involve the removal of buildings or structures currently on the site in a potentially dusty manner. This may also involve dust generation at heights. Dust emission magnitude from demolition can be classified as small, medium and large and are described below.

- **Large:** Total building volume >50,000 m³, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level;
- **Medium:** Total building volume 20,000 m³ – 50,000 m³, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- **Small:** Total building volume less than 20,000 m³.

There is some very minor demolition proposed in the form of removing a derelict house and outhouse/shed. The building volume involved will be significantly less than 20,000 m³. Therefore, the demolition works can be categorised as small. As the overall sensitivity of the area to dust soiling impacts is high (see Section 9.3.3), when combined with the small magnitude for demolition works, this results in an overall medium risk of dust nuisance impacts as per Table 9.9. As the overall sensitivity of the area to dust related human health impacts is medium (see Section 9.3.3). This results in a low risk of human health impacts from dust emissions during demolition (Table 9.9).

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Source (IAQM, 2014) Guidance on the Assessment of Dust from Demolition and Construction

Table 9.9 Risk of Dust Impacts – Demolition

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below.

- **Large:** Total site area > 10,000 m², potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), > 10 heavy earth moving vehicles active at any one time, formation of bunds > 8 m in height, total material moved > 100,000 tonnes;
- **Medium:** Total site area 2,500 m² – 10,000 m², moderately dusty soil type (e.g. silt), 5 – 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8 m in height, total material moved 20,000 – 100,000 tonnes;
- **Small:** Total site area < 2,500 m², soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4 m in height, total material moved < 20,000 tonnes, earthworks during wetter months.

The total site area is greater than 10,000 m² and there will be greater than 100,000 tonnes of material involved in excavation and infill works. Therefore, the dust emission magnitude for the proposed earthwork activities can be classified as large. As outlined in Table 9.10 and combined with the sensitivity from Section 9.3.3, there is an overall high risk of dust soiling impacts and a medium risk of human health impacts as a result of the proposed earthworks activities.

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source (IAQM, 2014) Guidance on the Assessment of Dust from Demolition and Construction

Table 9.10 Risk of Dust Impacts – Earthworks

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below.

- **Large:** Total building volume > 100,000 m³, on-site concrete batching, sandblasting;
- **Medium:** Total building volume 25,000 m³ – 100,000 m³, potentially dusty construction material (e.g. concrete), on-site concrete batching;
- **Small:** Total building volume < 25,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as large as a worst-case as the total building volume will be greater than 100,000 m³. As outlined in Table 9.11 and combined with the sensitivity from Section 9.3.3, there is an overall high risk of dust soiling impacts and a medium risk of human health impacts as a result of the proposed construction activities.

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source (IAQM, 2014) Guidance on the Assessment of Dust from Demolition and Construction

Table 9.11 Risk of Dust Impacts – Construction

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below.

- **Large:** > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m;
- **Medium:** 10 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100 m;
- **Small:** < 10 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

During the initial construction phase and site stripping there will be an estimate of 40 outward HGV movements per day. During typical site operations this will reduce to 10 – 15 outward HGV movements per day. Therefore, the dust emission magnitude for the proposed trackout can be classified as medium as a conservative approach. As outlined in Table 9.12 and combined with the sensitivity from Section 9.3.3, there is an overall medium risk of dust soiling impacts and a medium risk of human health impacts as a result of the proposed trackout activities.

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source (IAQM, 2014) Guidance on the Assessment of Dust from Demolition and Construction

Table 9.12 Risk of Dust Impacts – Trackout

Summary of Dust Emission Risk

The risk of dust impacts as a result of the proposed development are summarised in Table 9.13 for each activity. The magnitude of risk determined is used to prescribe the level of site specific mitigation required for each activity in order to prevent significant impacts occurring.

There is at most a high risk of dust soiling impacts and a medium risk of human health impacts associated with the proposed works. Therefore, dust mitigation measures associated with high risk sites will be implemented to ensure there are no significant impacts at nearby sensitive receptors. Additionally, the site will be developed on a phased basis and as such works will not take place on the entirety of the site at one time which will reduce the potential for dust emissions impacting nearby receptors. In the absence of mitigation, dust impacts are predicted to be short-term, direct, negative and moderate.

Potential Impact	Dust Emission Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Emission Magnitude	Small	Large	Large	Medium
Dust Soiling Risk	Medium Risk	High Risk	High Risk	Medium Risk
Human Health Risk	Low Risk	Medium Risk	Medium Risk	Medium Risk

Table 9.13 Summary of Dust Impact Risk used to Define Site-Specific Mitigation

9.5.1.1 Traffic Impacts

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic was reviewed in line with the TII assessment criteria in Section 9.2.2 to determine whether a detailed air quality assessment of traffic emissions was required. As the construction stage traffic did not meet the screening criteria a detailed air quality assessment of construction stage traffic emissions was screened out. It can be concluded that construction phase traffic emissions will have a short-term, localised, neutral and non-significant impact on air quality.

9.5.1.2 Human Health

Dust emissions from the construction phase of the proposed development have the potential to impact human health through the release of PM₁₀ and PM_{2.5} emissions. As per Table 9.13 there is at most a medium risk of dust impacts from the proposed construction works. Therefore, in the absence of mitigation there is the potential for localised, slight, negative, short-term impacts to human health as a result of the proposed development.

9.5.2 Operational Phase

9.5.2.1 Traffic Impacts

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The traffic data includes the Do Nothing and Do Something scenarios (see Section 9.2.3 and Table 9.4). The impact of NO₂, PM₁₀ and PM_{2.5} emissions for the Opening and Design Years was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, in order to determine the degree of impact.

The results of the assessment of the impact of the proposed development on NO₂ in the Opening Year 2025 and Design Year 2040 are shown in Table 9.14. The annual average concentration is in compliance with the limit value at the worst-case receptors in 2025 and 2040. Concentrations of NO₂ are at most 43% of the annual limit value in 2025 and 38% of the annual limit value in 2040. There are predicted to be some increases in traffic between the Opening and Design years. Therefore, any decrease in concentration is due to increased uptake in electric vehicles and lower vehicle exhaust emissions. In addition, the TII guidance (2022a) states that the hourly limit value for NO₂ of 200 µg/m³ is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m³. As predicted NO₂ concentrations are significantly below 60 µg/m³ (Table 9.14) it can be concluded that the short-term NO₂ limit value will be complied with at all receptor locations.

The impact of the proposed development on annual mean NO₂ concentrations can be assessed relative to "Do Nothing (DN)" levels. NO₂ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.31 µg/m³ at receptor R1, this is a 2.1% change from baseline conditions. Where the predicted annual mean concentrations are less than 75% of the air quality standard (see Table 9.1) and there is a less than 5% change in concentrations compared with the Do-Nothing scenario, then the impact is considered neutral as per the TII significance criteria (see Table 9.3). Therefore, the impact of the proposed development on NO₂ concentrations is neutral.

In relation to changes in PM₁₀ concentrations due to the proposed development, the results of the assessment can be seen in Table 9.15 for the Opening Year 2025 and Design Year 2040. The annual average concentration is in compliance with the limit value at the worst-case receptors in 2025 and

2040. Concentrations of PM₁₀ are at most 42% of the annual limit value in 2025 and 2040. In addition, the proposed development will not result in any exceedances of the daily PM₁₀ limit value of 50 µg/m³. The impact of the proposed development on annual mean PM₁₀ concentrations can be assessed relative to “Do Nothing (DN)” levels. PM₁₀ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.16 µg/m³ at receptor R1, this is a 1% change from baseline conditions. As with NO₂, where the predicted annual mean concentrations are less than 75% of the air quality standard (see Table 9.1) and there is a less than 5% change in concentrations compared with the Do-Nothing scenario then the impact is considered neutral as per the TII significance criteria (see Table 9.3). Therefore, the impact of the proposed development on PM₁₀ concentrations is neutral.

The results of the assessment of changes in PM_{2.5} concentrations due to the proposed development, can be seen in Table 9.16 for the Opening Year 2025 and Design Year 2040. The annual average concentration is in compliance with the limit value at the worst-case receptors in 2025 and 2040. Concentrations of PM_{2.5} are at most 52% of the annual limit value in 2025 and 2040. The impact of the proposed development on annual mean PM_{2.5} concentrations can be assessed relative to “Do Nothing (DN)” levels. PM_{2.5} concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.1 µg/m³ at receptor R1, this is a 0.8% change from baseline conditions. As with NO₂ and PM₁₀, where the predicted annual mean concentrations are less than 75% of the air quality standard (see Table 9.1). There is a less than 5% change in concentrations compared with the Do-Nothing scenario then the impact is considered neutral as per the TII significance criteria (see Table 9.3). Therefore, the impact of the proposed development on PM_{2.5} concentrations is neutral.

Overall, the impact of the proposed development on ambient air quality in the operational stage is considered long-term, localised, neutral, imperceptible and non-significant.

Receptor	Impact Opening Year				Impact Design Year			
	DN	DS	DS-DN	Description	DN	DS	DS-DN	Description
R1	14.5	14.9	0.31	Neutral	14.2	14.3	0.11	Neutral
R2	17.0	17.1	0.10	Neutral	15.1	15.1	0.03	Neutral
R3	14.9	15.0	0.16	Neutral	14.3	14.4	0.05	Neutral

Table 9.14 Annual Mean NO₂ Concentrations (µg/m³)

Receptor	Impact Opening Year				Impact Design Year			
	DN	DS	DS-DN	Description	DN	DS	DS-DN	Description
R1	15.3	15.5	0.16	Neutral	15.3	15.5	0.16	Neutral
R2	16.6	16.6	0.04	Neutral	16.6	16.6	0.04	Neutral
R3	15.5	15.6	0.08	Neutral	15.6	15.6	0.08	Neutral

Table 9.15 Annual Mean PM₁₀ Concentrations (µg/m³)

Receptor	Impact Opening Year				Impact Design Year			
	DN	DS	DS-DN	Description	DN	DS	DS-DN	Description
R1	12.2	12.3	0.10	Neutral	12.2	12.3	0.09	Neutral
R2	12.9	13.0	0.03	Neutral	12.9	12.9	0.03	Neutral
R3	12.3	12.4	0.05	Neutral	12.3	12.4	0.04	Neutral

Table 9.16 Annual Mean PM_{2.5} Concentrations (µg/m³)

9.5.2.2 Human Health

Traffic related air emissions have the potential to impact human health if they do not comply with the ambient Air Quality Standards detailed in Table 9.1. However, air dispersion modelling of traffic emissions has shown that levels of all pollutants are below the ambient air quality standards set for the

protection of human health (see Table 9.14, Table 9.15 and Table 9.16). It can be determined that the impact to human health during the operational stage is long-term, localised, neutral, imperceptible and non-significant.

9.5.3 Do Nothing Scenario

Under the Do Nothing Scenario no construction works will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased traffic volumes and associated air emissions will also not occur. The ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of air quality.

9.5.4 Cumulative Impacts

9.5.4.1 Construction Phase

According to the IAQM guidance (2014), should the construction phase of the proposed development coincide with the construction phase of any other development within 350m, then, there is the potential for cumulative construction dust impacts. However, a high level of dust control will be implemented across the site which will avoid significant dust emissions. Provided these mitigation measures are in place for the duration of the demolition and construction phase, cumulative dust related impacts to nearby sensitive receptors are not predicted to be significant. Cumulative impacts to air quality will be short-term, localised, negative and imperceptible.

There are no significant cumulative impacts to air quality predicted for the construction phase.

9.5.4.2 Operational Phase

The traffic data reviewed for the operational stage impacts to air quality included the cumulative traffic associated with other existing and permitted developments in the local area. Specific cumulative developments included in the traffic data for the assessment include committed developments Taylors Hill Phase 1 (Planning Ref. F15A/0437) and Phase 2 (Planning Ref. F15A/0550) and Ladyswell (Planning Ref. F21A/0055). Traffic associated with a number of schools in the area that are not currently at full capacity was also included. Further details of the committed developments can be found in the Traffic and Transport Assessment prepared by MPA Consulting Engineers and submitted with this planning application. Therefore, the cumulative impact is included within the operational stage impact for the proposed development. The impact is predicted to be long-term, localised, neutral, imperceptible and non-significant.

9.6 Remedial Or Reductive Measures

9.6.1 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 demolition, earthworks, construction and trackout activities (see Section 9.5.1.1). Therefore, the following dust mitigation measures shall be implemented during the construction phases 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. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). Specific attention has been given to the measures required by Dublin City Council in their document *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension, therefore, mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.

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 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 Vehicles / 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 kph 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

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Street and footpath cleaning must be undertaken during the ground works phase to minimise dust emissions. This can be carried out using water-assisted dust sweeper(s). If sweeping using a road sweeper is not possible due to the nature of the surrounding area then a suitable smaller scale street cleaning vacuum will be used.
- 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 bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- 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 demolition and ground works phases of the proposed development is required 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).

9.6.2 Operational Phase

No mitigation is proposed for the operation phase of the proposed development as it is predicted to have a neutral and imperceptible impact on air quality.

9.7 Predicted Impact Of The Proposed Development

9.7.1 Construction Phase

9.7.1.1 Air Quality

When the dust mitigation measures detailed in the mitigation section of this report (9.6.1) are implemented, the residual effect of fugitive emissions of dust and particulate matter from the site will be short term, direct, negative and slight in nature, posing no nuisance at nearby receptors.

9.7.1.2 Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active 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 of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be negative, short term and imperceptible with respect to human health.

9.7.2 Operational Phase

9.7.2.1 Air Quality

Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the TII REM tool. The modelling assessment determined that the change in emissions of NO₂, PM₁₀ and PM_{2.5} at nearby sensitive receptors as a result of the proposed development will be neutral. Therefore, the operational phase impact to air quality is long-term, localised, neutral, imperceptible and non-significant.

9.7.2.2 Human Health

Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are long-term, direct, neutral, imperceptible and non-significant.

9.8 Monitoring

9.8.1 Construction Phase

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the demolition and ground works phases of the proposed development is required 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).

9.8.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality are predicted to be neutral and imperceptible.

9.9 References

BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites

Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities

Dublin City Council (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

Environmental Protection Agency (2015) Advice Notes for Preparing Environmental Impact Statements – Draft

Environmental Protection Agency (2022) Air Quality Monitoring Report 2021 (& previous annual reports)
Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023a) Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2014) Guidance on the Assessment of Dust from Demolition and Construction Version 1.1

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Transport Infrastructure Ireland (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Transport Infrastructure Ireland (2022b) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance

USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures

World Health Organisation (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000)

10.0 CLIMATE

10.1 Introduction

This chapter assesses the likely impacts to climate associated with the proposed development at Flemington Lane, Balbriggan, Co. Dublin. A full description of the development is available in Chapter 3.

This chapter was completed by Ciara Nolan, a Senior Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds an MSc. (First Class) in Environmental Science from University College Dublin and has also completed a BSc. in Energy Systems Engineering. She is a Member of both the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Science (MIEnvSc). She has over 6 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for numerous developments including residential, industrial, commercial, pharmaceutical and data centres.

10.2 Methodology

10.2.1 Criteria for Rating of Impacts

10.2.1.1 Climate Agreements and Policies

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland ‘to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050’ (3.(1) of No. 46 of 2015). This is referred to in the Act as the ‘national transition objective’. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022) with an Annex of Actions published in March 2023.

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021b) is to provide for the approval of plans “for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050”. The 2021 Climate Act will also “provide for carbon budgets and a decarbonisation target range for certain sectors of the economy”. The 2021 Climate Act defines the carbon budget as “the total amount of greenhouse gas emissions that are permitted during the budget period”.

In relation to carbon budgets, the 2021 Climate Action and Low Carbon Development (Amendment) Act states ‘A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by

the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')'. The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 10.1. 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 Greenhouse Gas (GHG) emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectoral emission ceilings for 2030 were published in July 2022 and are shown in Table 10.2. Buildings (Residential) have a 40% reduction requirement and a 2030 emission ceiling of 4 MtCO_{2eq}¹.

Sector	Reduction Required	2018 Emissions (MtCO _{2eq})
2021-2025	295 Mt CO _{2eq}	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO _{2eq}	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO _{2eq}	Reduction in emissions of 3.5% per annum for the third provisional budget.

Note 1 Table derived Department of the Taoiseach press release 28 July 2022 from Government announces sectoral emissions ceilings, setting Ireland on a pathway to turn the tide on climate change Table 10.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025 (Government of Ireland 2022)

Sector	Reduction Required	2018 Emissions (MtCO _{2eq})	2030 Emission Ceiling (MtCO _{2eq})
Electricity	75%	10.5	3
Transport	50%	12	6
Buildings (Commercial and Public)	45%	2	1
Buildings (Residential)	40%	7	4
Industry	35%	7	4
Agriculture	25%	23	17.25
Other (F-Gases, Waste and Petroleum refining)	50%	2	1

Note 1 Table derived Department of the Taoiseach press release 28 July 2022 from Government announces sectoral emissions ceilings, setting Ireland on a pathway to turn the tide on climate change Table 10.2 Sectoral Emission Ceilings 2030

In December 2022, CAP23 was published (Government of Ireland 2022). This is the first CAP since the publication of the carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030. The CAP has six vital high impact sectors where the biggest savings can be made: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP23 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP23 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction. In order to ensure economic growth can continue alongside a reduction in emissions, the IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies.

¹ Mt CO_{2eq} denotes million tonnes carbon dioxide equivalent.

In April 2023 the Government published a draft Long-term Strategy on Greenhouse Gas Emissions Reductions (Government of Ireland 2023b). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan. The strategy will be updated on the basis of a second round of public consultation throughout 2023 with an updated strategy published after this is complete.

The Fingal County Council Climate Change Action Plan published in 2019 (Fingal County Council and Codema, 2019) outlines a number of goals and plans to prepare for and adapt to climate change. There are five key action areas within the plan: energy and buildings, transport, flood resilience, nature-based solutions and resource management. Some of the measures promoted within the Action Plan under the 5 key areas involve building retrofits, energy master-planning, development of segregated cycle routes, the promotion of bike share schemes, development of flood resilient designs, promotion of the use of green infrastructure and water conservation initiatives. The implementation of these measures will enable the Fingal County Council area to adapt to climate change and will assist in bringing Ireland closer to achieving its climate related targets in future years. New developments need to be cognisant of the Action Plan and incorporate climate friendly designs and measures where possible.

10.2.1.2 Climate Assessment Significance Criteria

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

The significance criteria for each assessment are described below.

Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled *PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document* (TII 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development. The approach is based on comparing the 'Do Something' scenario and the net project GHG emissions (i.e. *Do Something – Do Minimum*) to the relevant carbon budgets (Department of the Taoiseach 2022). With the publication of the Climate Action Act in 2021, sectoral carbon budgets have been published for comparison with the Net CO₂ project GHG emissions from the proposed development. The Industry sector emitted approximately 7 MtCO_{2eq} in 2018 and has a ceiling of 4 MtCO_{2eq} in 2030 which is a 35% reduction over this period (see Table 10.2).

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

TII (TII 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is “*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*”.

Significance is determined using the criteria outlined in Table 10.3 (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.

Effects	Significance level Description	Description
Significant adverse	Major adverse	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

Table 10.3 GHGA Significance Criteria

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 10.4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks.

		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

Table 10.4 Vulnerability Matrix

10.2.2 Construction Phase

10.2.2.1 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 10.3). The impact of the proposed development on climate is determined in relation to this baseline. As per the IEMA guidance (2022) where expected emissions will not increase by over 1% compared with the baseline scenario then no further assessment is required as there is no potential for significant impacts to climate. The construction stage activities and potential for GHG emissions have been reviewed as part of the construction stage climate assessment and a quantitative assessment conducted.

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2022b). 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 TII Online Carbon Tool (TII, 2022b) has been commissioned by TII to assess GHG emissions associated with road or rail projects using Ireland-specific emission factors and data. Given the nature of the proposed development use of the TII carbon tool is not ideal. However, it can be used to quantify the GHG emissions associated with the construction activities.

The TII Online Carbon Tool (TII, 2022b) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), UK National Highways Carbon Tool v2.4 and UK Government 2021 Greenhouse Gas Reporting Conversion Factors. The tool aligns with PAS 2080. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material/activity that will be used over the entire construction phase. The output is provided in terms of tonnes CO₂e.

The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2023) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data the tool allows for optioneering and optimization of the carbon impact by highlighting the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool has been used to assess the embodied carbon impact of the residential units.

10.2.3 Operational Phase

10.2.3.1 Climate Change Vulnerability Assessment

The operational phase assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- EU (2021) Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 10.3, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

The initial stage of an assessment is to establish a scope and boundary for the assessment taking into account the following criteria:

- Spatial boundary: As per PE-ENV-01104 (TII, 2022a), the study area with respect to the GHGA is Ireland's Climate budget. The study area with respect to the CCRA can be considered the project boundary and its assets. The study area will be influenced by current and future baselines (Section 10.3). This study area is influenced by the input of other experts within the EIAR team;
- Climate hazards: The outcomes of the climate screening i.e. vulnerability assessment and baseline assessment; and
- Project receptors: TII state that the project receptors are the asset categories considered in the climate screening. In addition, any critical connecting infrastructure and significant parts of the surrounding environment e.g. water bodies that should be considered as a part of the indirect, cumulative and in combination impact assessment should also be considered project receptors.

Technical guidance on the climate proofing of infrastructure in the period 2021-2027 (European Commission, 2021a) outlines an approach for undertaking a climate change risk assessment where there is a potentially significant impact on the proposed development due to climate change. The risk assessment assesses the likelihood and consequence of the impact occurring, leading to the evaluation of the significance of the impact. The role of the climate consultant in assessing the likelihood and impact is often to facilitate the climate change risk assessment process with input from the design team or specific specialists such as hydrology.

The climate screening risk assessment or vulnerability assessment is carried out by determining the sensitivity and exposure of the project to climate change. Firstly the project asset categories must be assigned a level of sensitivity to climate hazards irrespective of the project location (example: Sea level rise will affect seaport projects regardless of specific location). PE-ENV-01104 (TII, 2022a) provide the below list of asset categories and climate hazards to be considered. The asset categories will vary for project type and need to be determined on a project by project basis.

- **Receptors/Assets categories** - Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate hazards** - Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High sensitivity:** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium sensitivity:** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low sensitivity:** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type for example: flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High exposure:** It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium exposure:** It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low exposure:** It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability, as shown in Table 10.4.

10.2.3.2 Traffic Assessment

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The UK Highways Agency DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (UK Highways Agency, 2019) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

There are a small number of road links that will experience a change of over 10% in the AADT during the operational phase as a result of the proposed development. As a result a detailed assessment of traffic related carbon dioxide (CO₂) emissions was conducted.

PE-ENV-01104 (TII, 2022) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2022c) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO₂eq for the base year 2022, opening year 2025 and design year 2040. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development. Traffic data was obtained from MPA Consulting Engineers for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. See Chapter 9 Air Quality and Chapter 11 Material Assets – Transport for further details on the traffic data.

10.2.3.3 Operational Energy Usage

The EU guidance (2013) also states indirect GHG emissions as a result of a development must be considered, this includes emissions associated with energy usage. The Energy Statement prepared by Passive Dynamics and the Building Lifecycle Report prepared by Aramark in relation to the proposed

development have been reviewed and used to inform the operational phase climate assessment. These reports outline a number of measures in relation to energy usage from the proposed development primarily in relation to heat and electricity. A number of measures have been incorporated into the overall design of the development to reduce the impact to climate where possible.

10.3 Receiving Environment

PE-ENV-01104 (TII, 2022c) 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.

10.3.1 Greenhouse Gas Emissions

Data published in 2022 (EPA, 2022b) predicts that Ireland exceeded (without the use of flexibilities) its 2021 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 3.29 Mt CO_{2eq}. The sectoral breakdown of 2021 GHG emissions is shown in Table 10.5. The sector with the highest emissions in 2021 was agriculture at 38% of the total, followed by transport at 17.7%. For 2021 total national emissions (excluding LULUCF) were estimated to be 62.11 MtCO_{2eq} as shown in Table 10.5 (EPA, 2022b).

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, 2022) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, "*whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

The future baseline will be determined by Ireland meeting its targets set out in the CAP23, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted '*Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013*' (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and thus includes GHG emissions from transport, residential and commercial buildings and agriculture.

Category	2021 GHG Emissions (MtCO _{2e})	%of Total GHG Emissions
Agriculture	23.63	38.0%
Transport	10.99	17.7%
Energy Industries	10.27	16.5%
Residential	6.92	11.1%
Manufacturing Combustion	4.62	7.4%
Industrial Processes	2.48	4.0%
F-Gases	0.77	1.2%
Commercial Services	0.84	1.3%
Public Services	0.66	1.1%
Waste	0.94	1.5%
Total	62.11	100.0%

Table 10.5 Total National GHG Emissions in 2021

10.3.2 Climate Change Vulnerability

Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021b):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

The EPA's State of the Irish Environment Report (Chapter 2: Climate Change) (EPA, 2020c) notes that projections show that full implementation of additional policies and measures, outlined in the 2019 Climate Action Plan, will result in a reduction in Ireland's total GHG emissions by up to 25% by 2030 compared with 2020 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The EPA state that it is critically important for the public sector to show leadership and decarbonise all public transport across bus and rail networks to the lowest carbon alternatives. The report (EPA, 2020c) underlines that the next decade needs to be one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets and that Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.0°C and 1.6°C (subject to the emissions trajectory). In addition, heat events are expected to increase by mid-century (EPA, 2020c). While individual storms are predicted to have more severe winds, the average wind speed has the potential to decrease (EPA, 2020c).

TII's Guidance document PE-ENV-01104 (TII 2022) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

Future climate predictions undertaken by the EPA have been published in 'Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach (EPA 2020d). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060), mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There is a projected substantial decrease of approximately 50%, for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric power. Wind turbines need a specific range of wind speeds to operate within and droughts or low ground water levels may impact hydroelectric energy generating sites. More frequent storms have the potential to damage the communication networks requiring additional investment to create resilience within the network.

The EPA's Critical Infrastructure Vulnerability to Climate Change report (EPA, 2021b) assesses the future performance of Ireland's critical infrastructure when climate is considered. With respect to road infrastructure, fluvial flooding and coastal inundation/coastal flooding are considered the key climate

change risks with snowstorm and landslides being medium risks. Extreme winds and heatwaves/droughts are considered low risk to road infrastructure. One of the key outputs of the research was a framework that will provide quantitative risk-based decision support for climate change impacts and climate change adaptation analysis for infrastructure.

10.4 Characteristics Of The Proposed Development

The proposed development is located at Flemington Lane, Balbriggan, Co. Dublin. A full description of the development is available in Chapter 3.

Impacts to climate can occur during both the construction and operational stages of the development. During the construction stage the main source of climate impacts will be as a result of GHG emissions and embodied carbon associated with the proposed construction materials and activities for the proposed development. During the operational phase vehicle emissions from traffic accessing the site has the potential to release CO₂ and other GHGs which will impact climate. In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational phase. The following describes the primary sources of potential climate impacts which have been assessed as part of this EIAR.

10.5 Potential Impact Of The Proposed Development

10.5.1 Construction Phase

10.5.1.1 Greenhouse Gas Assessment

There is the potential for release of a number of greenhouse gas emissions to atmosphere during the construction of the proposed development.

The embodied carbon of the residential units has been calculated. This calculation was based on the Carbon Designer for Ireland tool for the structural building elements. The proposed development is estimated to result in total GHG emissions of 52,850 tonnes embodied CO₂eq over the lifetime of the development. This is equivalent to an annualised total of 0.03% of the 2030 Buildings (Residential) or Industrial sector budgets (both have same 2030 budget) when annualised over the lifespan of the development.

10.5.1.2 Climate Change Risk Assessment

Examples of potential climate impacts are included in Annex D (Climate proofing and environmental impact assessment) of the technical guidance on the climate proofing of infrastructure (European Commission, 2021a). Potential impacts of climate change of the proposed development include:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow;
- Geotechnical impacts; and
- Major Storm Damage – including wind damage.

Each of these potential risks are considered with respect to the operational phase of the proposed development as detailed in Section 10.5.2.1. During the construction phase no assessment is required however consideration will be given to the project's vulnerability to climate impacts. During construction, the Contractor will be required to mitigate against the effects of extreme rainfall / flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind / storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, 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.

10.5.2 Operational Phase

10.5.2.1 Climate Change Risk Assessment

In order to determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog. Wildfire and landslides were not considered relevant to the proposed development due to the project location and have been screened out of the assessment.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. Table 10.6 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 10.4. The results of the vulnerability assessment are detailed in Table 10.6 below.

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (coastal, pluvial, fluvial)	3 (Medium)	1 (Low)	3 (Medium)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

Table 10.6 Climate Change Vulnerability Assessment

The proposed development does not have any significant vulnerabilities to the identified climate hazards. The Stage 1 and Stage 2 Flood Risk Assessment (FRA) prepared by MPA Consulting Engineers indicates that flooding is not a risk at the project location. The site is contained within Flood Zone C. Adequate attenuation and drainage have been incorporated into the design of the development which allows for additional rainfall as a result of climate change thereby reducing the risk for the site.

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, the building materials selected at the detailed design stage will be of high quality and durability. Therefore, extreme temperatures are not considered a significant risk.

10.5.3.2 Climate and Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. The predicted concentrations of CO₂ for the future years of 2025 and 2040 are detailed in Table 10.7. These are significantly less than the 2025 and 2030 targets set out under EU legislation (targets beyond 2030 are not available). It is predicted that in 2025 the proposed development will increase CO₂ emissions by 0.00024% of the EU 2025 target. Similarly low increases in CO₂ emissions are predicted to occur in 2040 with emissions increasing by 0.00024% of the EU 2030 target.

Year	Scenario	CO ₂ eq
		(tonnes/annum)
2025	Do Nothing	1,016
	Do Something	1,111
2040	Do Nothing	1,040
	Do Something	1,119
Increment in 2025		95
Increment in 2040		78
Emission Ceiling (Tonnes) 2025		38,991,362
Emission Ceiling (Tonnes) 2030		33,381,312
Impact in 2025 (%)		0.00024%
Impact in 2040 (%)		0.00024%

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
Table 10.7 Traffic Emissions GHG Impact Assessment

10.5.3.3 Operational Energy Use

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. These are outlined fully within the Energy Statement and Building Lifecycle Report prepared in relation to the development. The primary elements with respect to reducing climate impacts are summarised below.

The design approach for the development has followed the “Be Lean, Be Clean, Be Green” objectives. This involves using less energy, Be Lean; supply energy efficiently, Be Clean; and using renewable energy, Be Green. The development will be a Nearly Zero Energy Building (NZEB) in accordance with the 2022 Part L requirements.

- A Building Energy Rating (BER) of A2/A3 is targeted.
- The buildings will be designed to reduce the heat loss to the exterior by using high levels of insulation and thermal glazing.
- Natural ventilation will be utilised as much as possible to avoid the requirement for mechanical ventilation which has a higher energy demand.
- Exhaust air to water heat pumps are proposed for the heating requirements for the residential apartment units with air-source heat pumps installed in the houses.
- Low energy LED efficient lighting will be used where possible.
- Where possible, low water use fittings and dual flush WC's will be specified at the detailed design stage.
- Durable building material will be selected to prevent the need for frequent replacement or maintenance thereby reducing the embodied footprint of the development.

Overall these measures will aid in reducing the impact to climate during the operational phase of the proposed development.

10.5.3 Do Nothing Scenario

Under the Do Nothing Scenario no construction works will take place and the site will remain as it currently is. The climate baseline will continue to develop in line with the identified trends (see Section 10.3). This scenario is considered neutral in relation to climate.

10.5.4 Cumulative Impacts

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that “for GHG Assessment is the global climate and impacts on the receptor from a project are not

geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable.”

However, by presenting the GHG impact of a project in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland’s ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

10.6 Remedial Or Reductive Measures

10.6.1 Construction Phase

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- 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.

10.6.2 Operational Phase

A number of measures have been incorporated into the design of the development in order to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 10.5.3.1).

A number of incorporated design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Full details of these measures are outlined within the Energy Statement and Building Lifecycle Report prepared in relation to the development. These measures are detailed in Section 10.5.3.3. These measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Change Action Plan.

10.7 Predicted Impact Of The Proposed Development

The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is “*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*”. The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the assessment criteria in Table 10.3 the impact of the proposed development in relation to GHG emissions is considered long-term, minor adverse and not significant.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change.

10.8 Monitoring

There is no monitoring required for the construction or operational phase of the development.

10.9 REFERENCES

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Institute of Environmental Management & Assessment (IEMA) (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance

One Click LCA Ltd. (2023) Carbon Designer for Ireland Tool

Transport Infrastructure Ireland (TII) (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

Transport Infrastructure Ireland (TII) (2022b) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

Transport Infrastructure Ireland (2022c) TII Roads Emissions Model (REM) and Model Development Report (GE-ENV-01107)

UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate

11.0 WIND AND MICROCLIMATE

11.1 Introduction

This section of the EIAR has been prepared by AWN Consulting Ltd (AWN) to assess the potential microclimate impact of the proposed development in the context of current relevant standards and guidance.

This chapter includes a description of the receiving environment in the vicinity of the subject site and an assessment of the potential microclimate impact associated with the proposed development during both the short-term construction phase and the long-term operational phase on its surrounding environment. The assessment of direct, indirect and cumulative impacts on the surrounding environment have been considered as part of the assessment.

Mitigation measures are included, where relevant, to ensure the proposed development is constructed and operated in an environmentally sustainable manner in order to ensure minimal impact on the receiving environment.

This assessment has been prepared by Dr Fergal Callaghan at AWN Consulting who has over 30 years' experience as an environmental consultant specialising in Microclimate and Environmental Impact Assessment. He has authored numerous Reports EIAR chapters for various developments including residential schemes, mixed-use developments, and commercial developments.

11.2 Research Methodology

The assessment has been undertaken with reference to the most appropriate guidance documents relating to Microclimate and EIA which are set out in the following sections. In addition, the following Environmental Protection Agency as follows:

- 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); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);

The study has been undertaken using the following methodology:

- Determination from available data of the baseline (current) classification of the site with respect to The Beaufort Scale for Wind on Land.
- Examination of the proposed development and the potential for wind-speed amplification factors.
- Assessment of the impacts with regard to Microclimate

11.3 Receiving Environment

The subject site is located at Flemington Lane, Balbriggan. The surrounding environment in the vicinity of the development site is a mixture of agricultural land and 2-storey residential development.

Baseline Environment

Dublin Airport (located some 20.4km to the south of the site) meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 11.1 below). For data collated during five representative years (2018-2022), the predominant wind direction is south-westerly with an average wind speed of approximately 3-5 m/s, measured at a height of 10m

above ground.

The Beaufort scale and its relationship to wind speed in metres/second is shown in Table 11.1 below. It can be seen that the site typically experiences Beaufort 3/Beaufort 4 (B3/B4) wind conditions for much of the time.

Beaufort Scale	Wind speed(m/s)
0	<0.3
1	0.3-1.5
2	1.6-3.3
3	3.4-5.4
4	5.5-7.9
5	8.0-10.7
6	10.8-13.8
7	13.9-17.1
8	17.2-20.7
9	20.8-24.4
10	24.5-28.4
11	28.5-32.6
12	>32.7

Table 11.1 Beaufort Scale and Wind speed

The site of the proposed development can therefore be characterised as a site which experiences average wind speeds of B3/B4, which corresponds to gentle to moderate breeze on the Beaufort Scale.

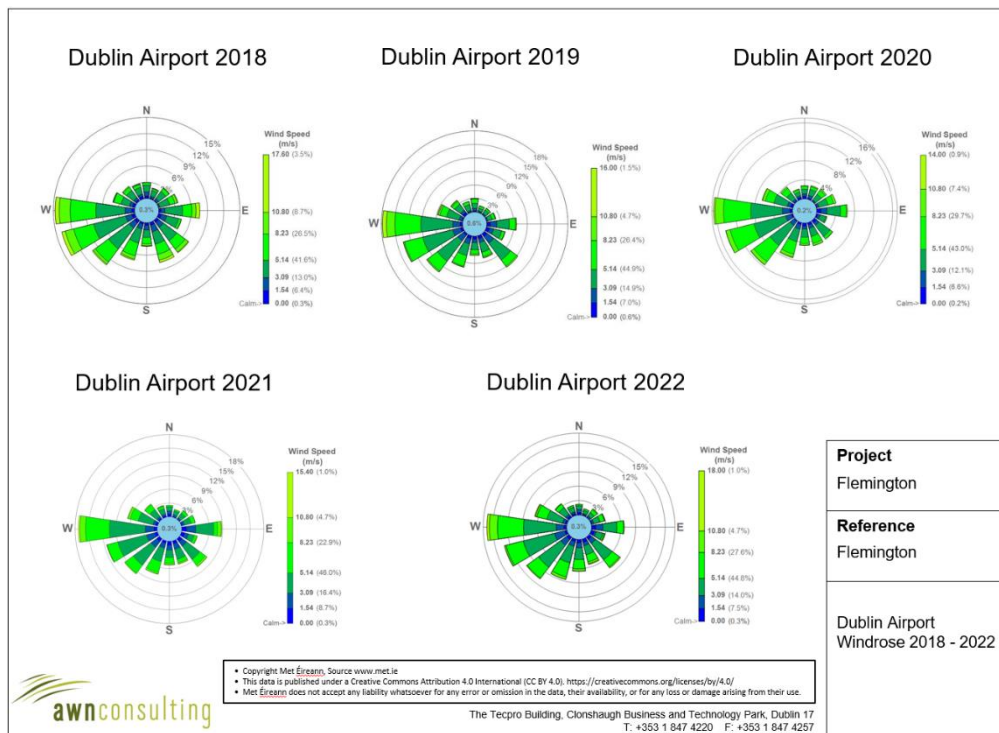


Figure 11.1 Windrose for Dublin Airport

11.4 Characteristics of the Proposed Development

The proposed development will consist of:

- (i) *The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*
- (ii) *The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35 no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:*
 - (a) *Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).*
 - (b) *Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.*
 - (c) *Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes) and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).*
 - (d) *Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8 no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.*

- (e) *Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments (6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.*

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) *the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).*
- (iv) *the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.*
- (v) *the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.*
- (vi) *a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.*

11.5 Potential Impact of the Proposed Development

The potential impact of the proposed development is described in the following sections.

11.5.1 Construction Phase

Given the short term nature of the construction phase there are no expected microclimate impacts. Buildings under construction remain substantially open to the elements for much of the construction period (windows and door openings remain open for example) and tend to be surrounded by scaffolding - which is also mostly void space. These openings tend to ensure that wind passes through these structures under construction ensuring that the buildings under construction tend to have no impact on wind flow.

11.5.2 Operational Phase

Wind is normally described by its speed, either as a mean or gust speed. However, people sense the effect of the wind force, which is what we can feel, see and hear during windy conditions. Wind force is proportional to wind speed squared, therefore a relatively small increase in the wind speed can have a large effect on pedestrian comfort.

All buildings obstruct the free flow of the wind, causing it to be deflected and accelerated, resulting in very complex flow patterns. When the wind strikes the front face of a building, it will produce positive pressures that reach a maximum value at a point between about two thirds and three-quarters of the building height.

Below this height the wind will tend to be deflected down the front face towards the ground, often called 'downwash', and accelerated around the corners at ground level potentially producing areas of high wind speed and strong negative pressure. Above this height the wind will be deflected upwards and accelerated over the roof, again causing areas of high wind speed and increased turbulence. This can be a concern for roof gardens and roof terraces. A significant proportion of the wind will also spill around the side faces. Downwind, the flows around the building will recombine into a region of negative pressure known as the 'wake'.

Wind speed increases with height above ground; it follows, therefore, that the taller a building the higher the wind speeds acting on it. However, not all tall (where tall is greater than 25 metres) buildings cause wind problems; what is important is the relative height of the building compared with that of neighbouring buildings.

A tall building in a group of tall buildings might not cause problems whereas a mid-rise building can cause unacceptable conditions if it is adjacent to an open area or has features or openings at ground level which can accelerate wind speed. When the wind strikes a building, it will generate positive pressures on the windward face and suction on the side, roof and leeward faces.

The wind will flow in the direction of decreasing pressure gradient, that is, from areas of high pressure to areas of lower pressure. As noted above, this causes wind flow down the front face, which brings high-speed wind from higher levels down to ground level. This can significantly increase ground-level wind speeds. The downwash on the windward face will tend to 'roll up' in front of a building, creating a windward vortex. The highest wind speed-up will occur near the centre of the face a short distance in front of the building, where the wind speed-up factor, S , can vary between about 1.2 and 2.0 depending on the building height. The flow then accelerates around the sides towards the low-pressure area in the wake. The S factor can reach 2.0 to 2.5 close to the corners of tall buildings, although values closer to 1.5 are likely for mid-rise buildings.

In general, tall, rectangular, sharp-edged buildings will generate the highest local ground-level wind speeds and the largest 'footprint' area of unpleasant wind speeds.

The UK Buildings Research Establishment (BRE DG 520: Wind Microclimate Around Buildings) has noted that wind speeds in the vortex between a tall building and a lower building (this occurs in the space in front of a tall building behind the lower building) can be up to 1.5 times the free wind speed (free wind speed being that measured in an open area with no buildings).

Wind speeds in the corner streams around either side of a tall building can be up to 2.5 times the free wind speed.

A useful document on wind speeds and tall buildings notes that tall buildings are generally taken to mean buildings more than 25m high, "Wind Microclimate Guidelines for Developments in the City of London (August 2019).

The proposed development consists predominantly of two-storey properties with a small number of apartment blocks to 3 or 4 storeys.

It is acknowledged that the construction of new buildings can lead to changes to the local wind environment around the building. Generally elevated wind speeds around tall buildings are generated

at three main points, either at ground level in the space behind a lower building and in front of a tall building, at an opening within the building envelope at ground level such as a tunnel or mall through the building or at building corners. Elevated wind speed can also be generated where a street runs between two tall buildings, leading to a “canyon effect”.

T.V. Lawson in *Building Aerodynamics*, Imperial College London, Imperial College Press, 2001, has noted that when wind approaches a built-up area it is displaced upwards to roof level and generally flows across landscape at roof level, with gusts down to street level that are a function of the relative height to width of the street canyon.

It will be noted from the windrose presented as Figure 2.1 that as the predominant wind directions are from the west and from the south west, wind striking the proposed development will therefore already have travelled across the open farmland to the west and south west of the proposed development.

The area downwind of the proposed development is dominated by mainly two storey residential development which is currently exposed to the wind flows across the open farmland, given that the proposed development does not have any tall buildings, minimal disturbance to wind-flow is expected and no significant impacts on microclimate are predicted.

11.6 Do-Nothing Approach

In the absence of the proposed development being constructed, the microclimate environment will remain largely unchanged. The microclimate baseline described above is considered representative of the Do-Nothing scenario. The Do-Nothing scenario is therefore considered a neutral impact.

That said, if the proposed development were not to proceed, then a different development, similar in nature may be constructed as the land is zoned for development in keeping national and local policy.

11.7 Remedial or Reduction Measures: Mitigation

No mitigation measures are required during the construction or operational phases.

11.8 Predicted Impact of the Proposal

It is predicted that construction activity will have a *neutral*, *slight* and *short-term* impact.

The predicted of the operational phase is *neutral*, *imperceptible* and *permanent*.

11.9 Monitoring

No cumulative impacts are predicted.

12.0 MATERIAL ASSETS – TRANSPORT

12.1 Introduction

This chapter of the Environmental Impact Assessment Report assesses the likely impact 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 surroundings; the characteristics of the proposed development; the potential impact which proposals of this kind would be likely to produce during both the construction and operational phases; the remedial or reductive measures required to prevent, reduce, or offset any significant adverse effects; and any residual impacts that may remain. This chapter is based on the outcome of the Traffic and Transport Assessment Report (reference: 191004-TTA01), and Traffic and Transport Assessment Update Report (reference 191004-TTA02). These reports have been attached as **Appendix 12.1** and **Appendix 12.2**.

This chapter has been prepared by Brian Condon, BSc CMILT MCIHT, from MPA Consulting Engineers. Brian graduated from the University of Plymouth with Bachelor of Science in Civil Engineer in 1997. Brian is a Chartered Member of the Institute of Logistics and Transport and a Member of the Chartered Institute of Highways and Transportation. Brian has over 20 years professional experience in the field of transport planning and engineering which has included providing consultancy services in respect of several major urban regeneration and expansion projects.

12.2 Research Methodology

The following methodology has been adopted for this assessment:

- Review of relevant available information including:
 - Development Plans;
 - Existing traffic information; and
 - Other relevant studies;
- Site visits to quantify existing road network issues and identify local traffic characteristics;
- 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.

12.3 Receiving Environment (Baseline Situation)

This section considers the baseline conditions, providing background information for the site in order to determine the significance of any traffic implications. This section also considers the existing accessibility of the site by sustainable modes of transport.

12.3.1 Site Location

The Dean Swift LRD site is located on the western side of Balbriggan, the proposed site measures some 22.62 hectares (including Residential Site Area: 19.28ha & Class 1 Open Space - 2.8667ha) as shown in Figure 12.1 below.

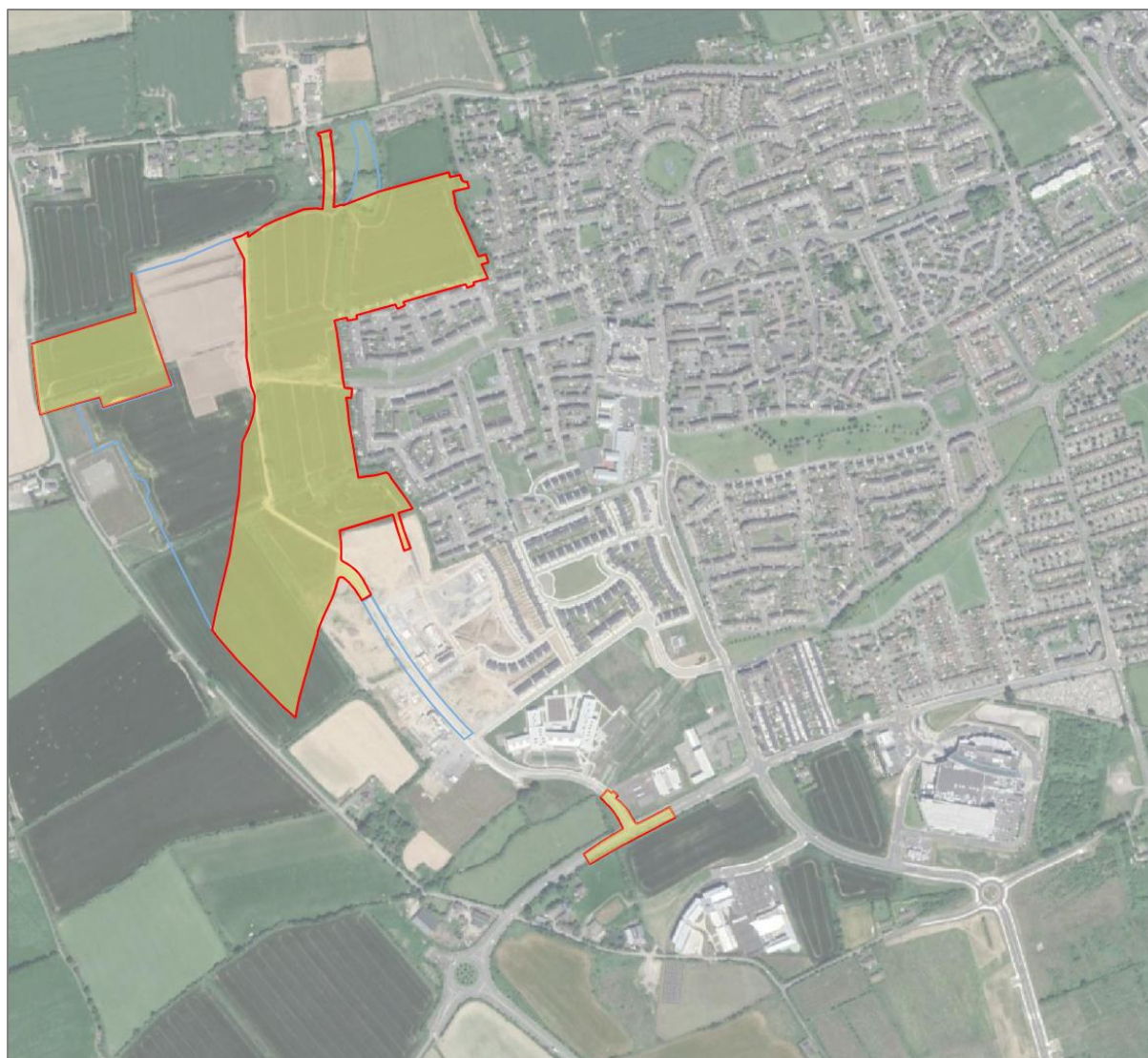


Figure 12.1 Site Location

The site is approximately 2.0km northwest of the town centre and 1.0km northeast of Junction 6 of the M1 Motorway (Dublin to Belfast).

The site is located north of Clonard Road / Naul Road (the R122) and east of Bridgefoot Road (the L1130) and is bounded by Boulevard Road/the Taylor Hill residential development to the east and zoned lands (North West Balbriggan Masterplan) to the north.

Balbriggan itself is located approximately 30km north of Dublin City in the northern part of the traditional County Dublin (now Fingal) and is home to a population of nearly 22,000 (2016 census).

Balbriggan is well connected due to the proximity of the M1 motorway that links south to the M50/Dublin (and beyond to the rest of the country) and north to Belfast. The main Belfast-Dublin railway line passes through Balbriggan station and several bus routes provide regular links to Dublin City and other local destinations.

12.3.2 Surrounding Road Network

The local road network is shown in Figure 12.2:

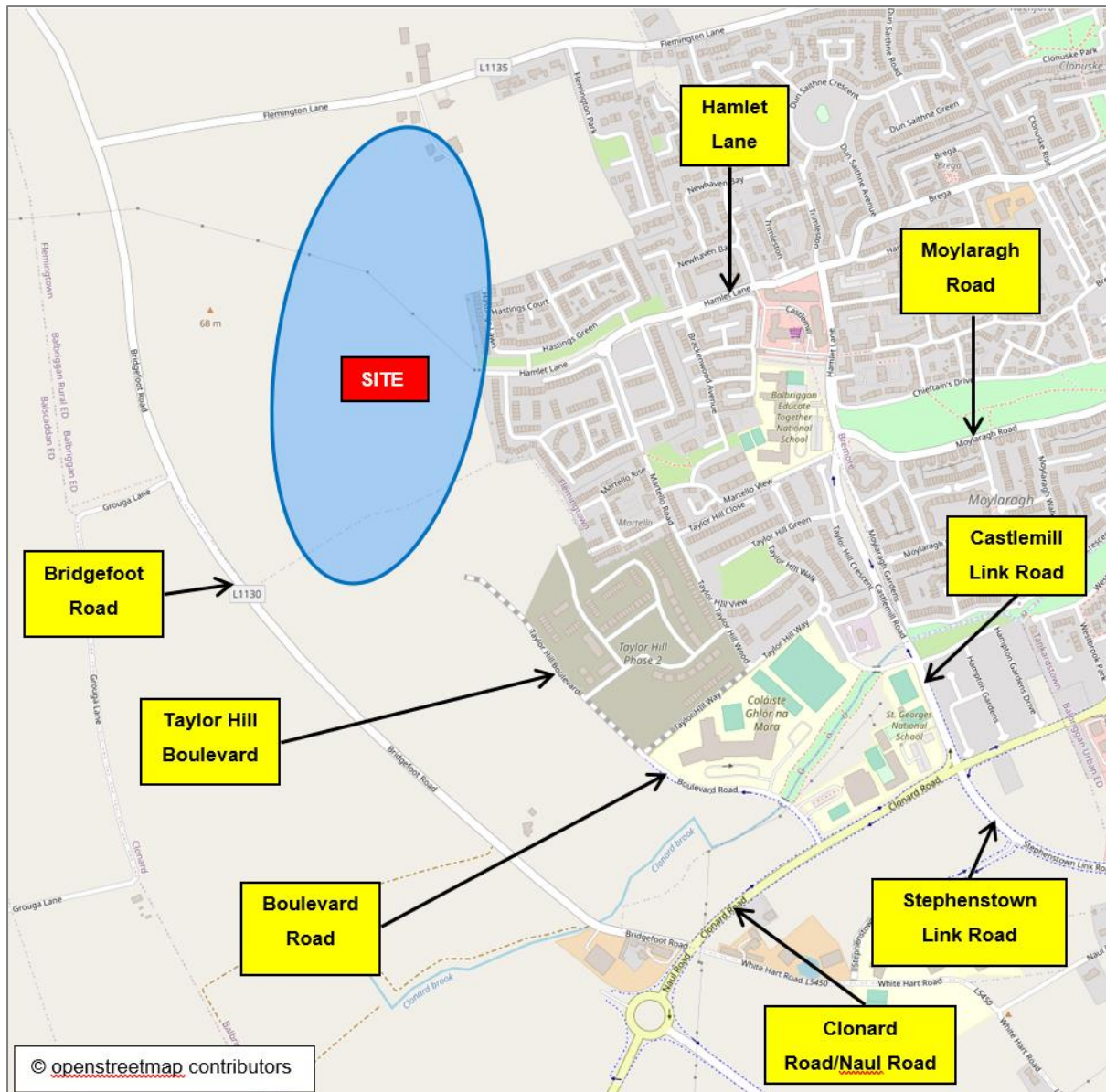


Figure 12.2 Local Road Network

12.3.2.1 R122 Clonard Road / Naul Road

The R122 provides a link between the M1 and Balbriggan town centre and is known as Clonard Road in the vicinity of Boulevard Road but becomes Naul Road west of Bridgefoot Road.

Naul Road connects to the existing 'C Ring' Road around the southern side of Balbriggan (the L1390) at a large three-armed roundabout.

This road has a single carriageway of typically 7.5m width, with flares and turning lanes at junctions. There are dedicated cycle and pedestrian facilities of 1.5m each on both sides of the road.

12.3.2.2 Boulevard Road / Taylor Hill Boulevard

Boulevard Road has been constructed over a length of approximately 680m from Clonard Road to a point northwest of the Taylor Hill Phase 2 as shown overleaf in Figure 12.3.

Boulevard Road provides a single lane carriageway width of 6.8m with a 2m verge, 1.5m cycleway and 2m footway on both sides.

Boulevard Road continues to the northwest, whereby it becomes Taylor Hill Boulevard, to serve the proposed development and connect with the proposed Flemingington Link Road (FLR), which was formerly referred to as part of the 'C Ring' Road around the northwest of Balbriggan. The future route of the FLR and the wider road hierarchy is shown in Figure 12.4 below.

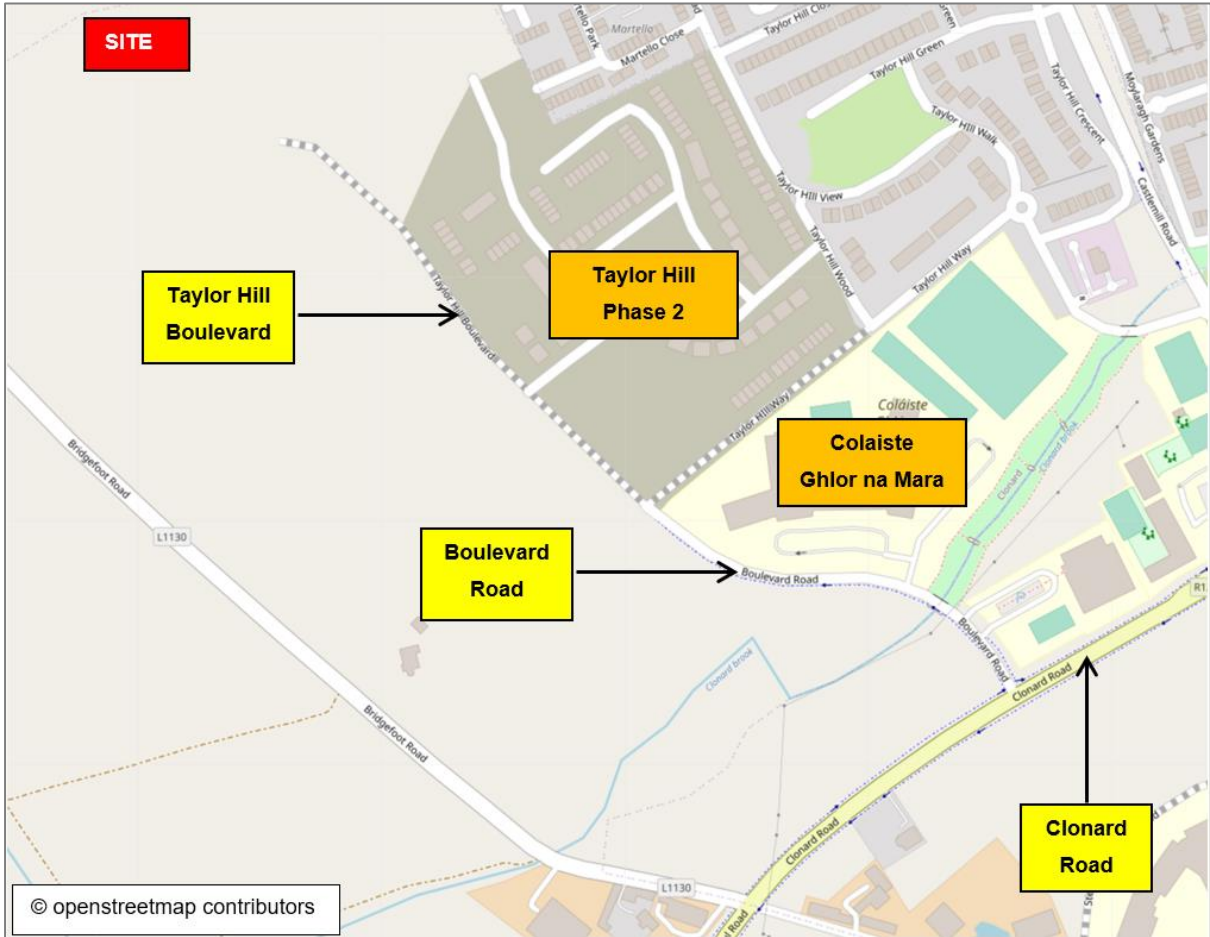


Figure 12.3 Boulevard Road / Taylor Hill Boulevard

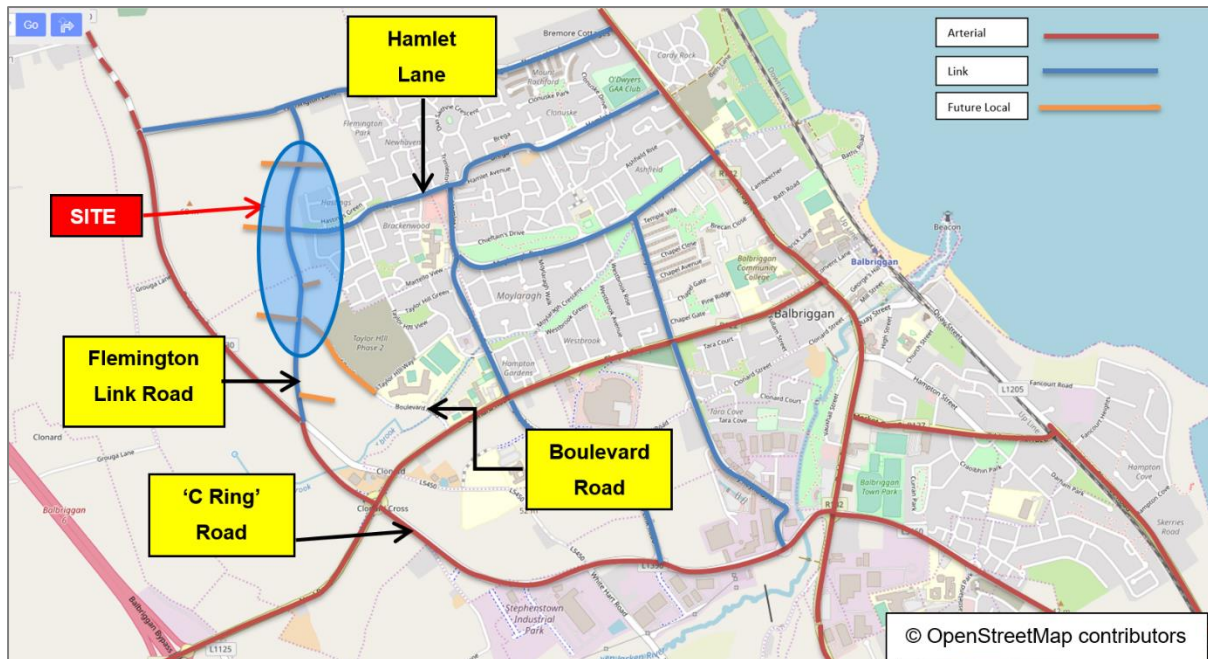


Figure 12.4 Balbriggan Future Road Hierarchy

12.3.2.3 Hamlet Lane

Hamlet Lane runs east-west from Drogheda Road to the east of Balbriggan, to the development site and provides access to the existing residential areas of northwest Balbriggan (Newhaven, Clonuske and Barnwall Court). There is a 300m stretch of road between Barrons Hall Rise and Clonuske Rise where Hamlet Lane is known as Brega. For the purposes of this report the whole length of road is referred to as Hamlet Lane.

Hamlet Lane is typically over 7.0m wide from the site to its junction with Clonuske Drive and benefits from a footway / cycleway provided along its northern side. A footway and intermittent footway / cycleway is provided on the south side of the carriageway.

Between Clonuske Drive and Drogheda Road, Hamlet Lane is around 5.5m wide with a 1.5m wide footway along its southern side.

12.3.3 Existing Traffic

Nationwide Data Collection (NDC) were instructed by MPA to undertake turning count surveys at six junctions as identified below and shown in green in Figure 12.5.

1. Trimleston/Hamlet Lane (W)/The Park/Hamlet (E)
2. The Park (N)/The Park (S)/Moylaragh Road
3. Castlemill Link Road (N)/Unnamed Road/Castlemill Link Road (S)/Hampton Gardens Drive
4. Boulevard Road/Clonard Road (W)/Clonard Road (E)
5. Castlemill Link Road/Clonard Road (W)/Unnamed Road/Clonard Road (E)
6. Westbrook Park/Clonard Road/Millfield Shopping Centre/Chapel Street

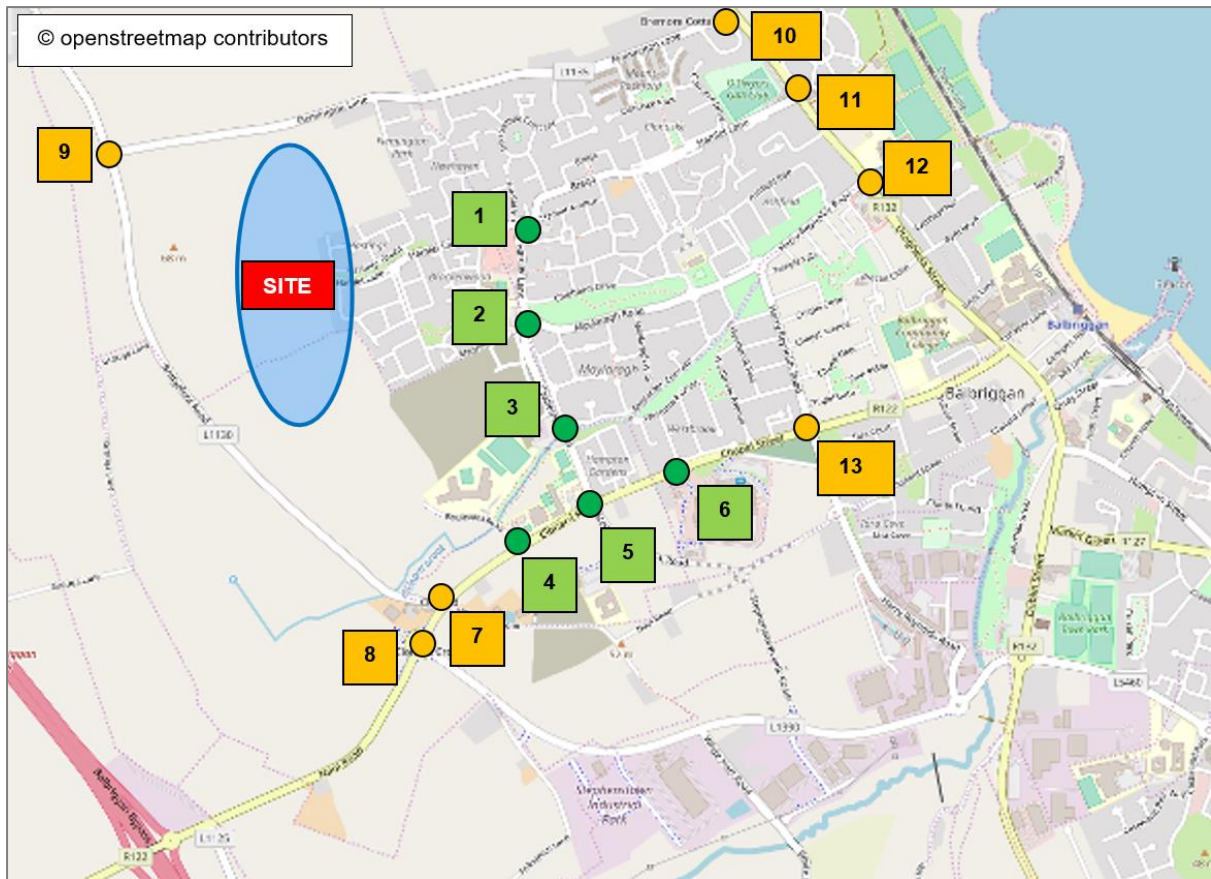


Figure 12.5 Traffic Survey Locations

All sites were surveyed on Wednesday the 28th November 2018 using telescopically mounted video cameras from which the information was subsequently extracted. The survey was carried out with survey hours of 07:00 to 19:00. All information was collected in 15-minute intervals and has been tabulated with both hourly and period totals.

Two-way pedestrian crossing counts were undertaken in 15-minute intervals and tabulated with both hourly and period totals.

The 2018 Traffic Survey results are attached as Appendix A of the submitted TTA01 which is included here as **Appendix 12.1**.

Additional traffic data was obtained from previous studies undertaken by MPA in Balbriggan at seven further junctions as shown marked in orange in Figure 12.5 and summarised below:

7. Clonard Road / Bridgefoot Road / White Hart Road
8. Clonard Road / Naul Road / L1390
9. Bridgefoot Road / Flemington Lane
10. Drogheda Road / Flemington Lane
11. Drogheda Road / Hamlet Lane
12. Drogheda Road / Harry Reynolds Road
13. Chapel Street / Harry Reynolds Road

This enabled an Area Wide Traffic Model to be built to identify the percentage impact of the proposed development at each critical junction.

In accordance with the TII's 'Traffic & Transport Assessment Guidelines' (TTAG), the TTA focusses on the junctions that will experience more than a 5/10% increase due to the traffic associated with the proposed development. In these locations, detailed junction modelling has been undertaken.

12.3.3.1 2022 Traffic Survey Comparison

In March 2022, additional traffic surveys were carried out three junctions along Clonard Road. These junctions are:

- Junction 5: Clonard Road / Castlemill Link Road / Stephenstown Link Road;
- Junction 8: Clonard Road / Naul Road / L1390;
- Junction 13: Chapel Street / Harry Reynolds Road.

A comparison of the TTAR 2022 Base traffic volumes, and the 2022 Surveyed traffic volumes indicate a negligible difference in the total traffic volumes across the three junctions and individually the junctions are generally within +/- 5%.

It is concluded that the traffic survey data and modelling used within TTA01, and the remainder of this Chapter, is in line with the up-to-date flows on the road network.

The full details of the survey comparison are included within Technical Note (TN07) which is included with the TTA Update 191004-TTA02 submitted with this application and is included in **Appendix 12.2** of this EIAR.

12.3.3.2 Interpolated 2020 AADT Base Traffic Flows (No Development)

The 12-hour traffic flows have been converted to Annual Average Daily Traffic (AADT) flows using the Transport Infrastructure Ireland Project Appraisal Guidelines Document '*Unit 16.1: Expansion Factors for Short Period Traffic Counts*'.

Table 12.1 outlines the AADT base flows (not including traffic flows from either the proposed or committed development) for 2025 (year of opening), 2030 and 2040 (15 years after year of opening), at the following junctions:

- Trimleston/Hamlet Lane (W)/The Park/Hamlet (E)
- Boulevard Road/Clonard Road (W)/Clonard Road (E)
- Castlemill Link Road/Clonard Road (W)/Unnamed Road/Clonard Road (E)

Junction	Road	2025 AADT (Veh)	2030 AADT (Veh)	2040 AADT (Veh)
Junction 1: Hamlet Lane / Barons Hall Rise / Trimleston	Hamlet Lane (E)	4,829	5,213	5,435
	The Park (S)	4,100	4,428	4,617
	Hamlet Lane (W)	3,462	3,742	3,905
	Trimleston (N)	372	401	418
Junction 4: Clonard Rd / Boulevard Junction	Clonard Rd West	14,929	16,121	16,812
	Boulevard Rd	943	1,023	1,071
	Clonard Rd East	14,798	15,974	16,653
Junction 5: Castlemill Link Rd / Clonard Rd Junction	Castlemill Link Rd	8,468	9,135	9,517
	Clonard Rd West	14,798	15,974	16,653
	Stephenstown Link Rd	5,068	5,471	5,704
	Clonard Rd East	8,600	9,287	9,684

Table 12.1 AADT Traffic Flows (without traffic flows from either the proposed or committed development in the area)

12.3.4 Accessibility for Pedestrians and Cyclists

12.3.4.1 Pedestrian Facilities

Good quality footways are provided on both sides of all road and footways are typically 2.0 metres wide and formed with concrete. Drop kerbs are provided where these footways cross side road junctions.

Walking journeys to and from the various local facilities is likely to be a genuine travel choice for many residents of the development.

Acceptable walking distances will vary considerably depending on various factors such as fitness and land topography; however, the 'Providing for Journeys on Foot' guidelines produced by the Chartered Institution of Highways and Transportation (CIHT) identifies suggested acceptable walking distances for different types of journey as shown in Figure 12.6.

	Town centres (m)	Commuting/School Sight-seeing (m)	Elsewhere (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred maximum	800	2000	1200

Figure 12.6 Suggested Acceptable Walking Distances (CIHT)

These distances can be applied to the subject site as shown in Table 12.2

Facility	Distance	Walking Time	CIHT Maximum Guidance
Bus Stops (Hamlet Lane)	400m	5 mins	400m
Colaiste Ghlor na Mara	900m	11 mins	2,000m
St George's National School	1,200m	14 mins	2,000m
Scoil Chormaic Community National School	1,700m	20 mins	2,000m
Bremore Educate Together Secondary School	1,800m	21.5 mins	2,000m
Balbriggan Educate Together National School	1,000m	12 mins	2,000m
Millfield Shopping Centre	1,800m	21.5 Mins	1,200m
Castlemill Shopping Centre	900m	11 mins	1,200m
Community Centre	950m	11.5 mins	1,200m
Class 1 Public Open Space	150m	2 mins	2,000m
Town Centre	3,000m	36 mins	2,000m
Train Station	2,800m	33 mins	2,000m
Stephenstown Industrial Estate	2,500m	30 mins	2,000m

Table 12.2 Walking Distance and Times versus CIHT Guidance

On the basis of the above, it is evident that the proposed development is well located and that an extensive range of local facilities can easily be accessed on foot. The development itself has been designed to include high quality pedestrian routes that link through to the existing off-site routes.

12.3.4.2 Cycling Facilities

The CIHT state that three quarters of journeys by all modes are less than five miles (8km) and half are less than two miles (3.2km). These are distances that can be cycled comfortably by a reasonably fit person. The whole of Balbriggan is within 3.2km of the housing development.



Figure 12.7 3.2KM Cycling Catchment Around Site

Therefore, cycling to and from the development is a viable option as residents and visitors alike can make use of the extensive network of cycle infrastructure already in place around the site, which includes dedicated off-road cycleways and those provided as a segregated facility along Hamlet Lane, the R122, and Castlemill Link Road.

12.3.4.3 Public Transport Accessibility

Bus

Balbriggan is served by the Balbriggan Town Service (B1), which operates on two routes around the town as shown in green and purple below in Figure 12.8.

The green route presently serves the northern and western parts of Balbriggan via Moylaragh Road and Hamlet Lane, whilst the pink route serves the southern and western parts of the town via the R132, Harry Reynolds Road and Clonard Road.

The closest bus stops to the site are located on Hamlet Lane as shown in Figure 12.8, which is a 5-minute walk from the centre of the site.

The B1 currently operates on an hourly frequency.

As part of the Dean Swift and Ladywell developments, a road link will be provided between Boulevard Road and Hamlet Lane. This would enable the extension of the B1 service to form a loop as shown by the dashed blue line in Figure 12.8.

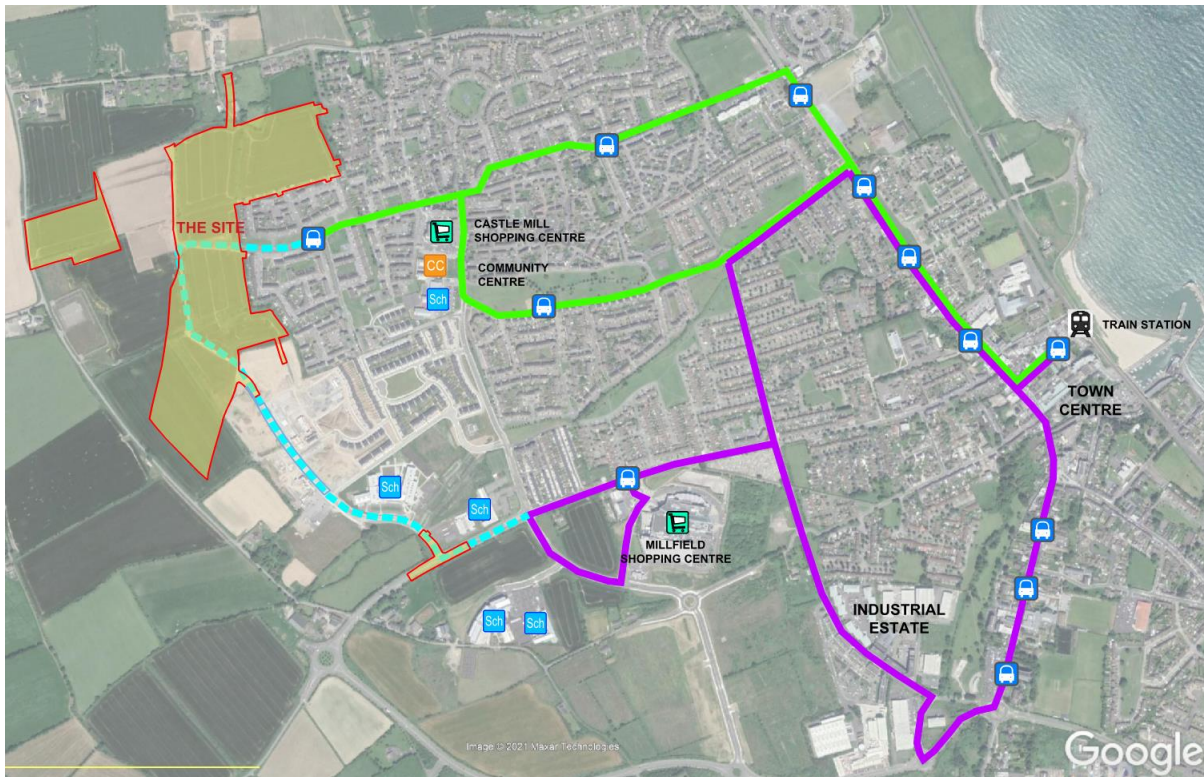


Figure 12.8 B1 Balbriggan Town Bus Service

Rail Access

Balbriggan Railway Station is located north of the town centre and is accessed by the B1 bus service (nine-minute journey).

Balbriggan Railway Station is on the Dublin-Dundalk commuter line, as shown in Figure 12.9, and train services to Dublin Connolly are regular with a 15 to 35-minute frequency during the week between 06:19 and 22:21.

The frequency reduces to 30-60 minute on Saturdays and hourly on Sundays. The northbound route to Drogheda runs to a similar frequency.

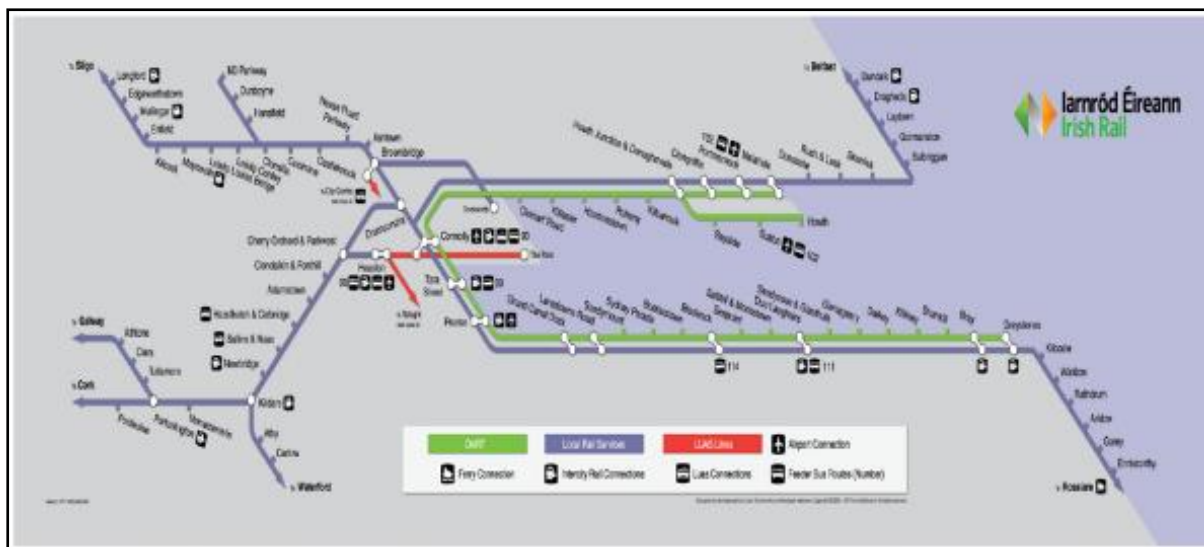


Figure 12.9 Irish Rail Network

Thus, residents of the development can easily use a combination of bus and train services to journey into Dublin for work or other purposes.

Future DART+ Rail Service

Plans for the extension of DART services from Dublin to Drogheda have recently been published by the National Transport Authority. The expansion programme, rebranded DART+, aims to double peak hour capacity with more trains and new stations, to create a full metropolitan area DART network for Dublin. A delivery date and funding for the DART+ Coastal North line has yet to be announced, however the DART+ programme is seen as key project and is included in the National Development Plan 2018-2027, Transport Strategy for the Greater Dublin Area 2016 – 2035 and The Climate Action Plan 2019.

When delivered, the project (DART+ Coastal North) will provide a modern and frequent rail service that will connect Balbriggan to Dublin City and Drogheda.

12.3.4.4 Road Safety

The Road Safety Authority’s website has been interrogated to identify the number of collisions/accidents that have occurred along the Clonard Road corridor to the west of the Castlemill Link Road. This reveals that there have been no accidents at Junction 4 (Boulevard Road).

There have been two accidents at Junction 5 (Castlemill Link Road) and further accidents at the Bridgefoot Road junction and Naul Road roundabout as shown in Figure 12.10.

The two accidents at the Castlemill Link Road junction resulted in slight or serious injuries. All injuries at the Bridgefoot Road and Naul Road roundabout resulted in slight injuries.

This is considered to be a low number of accidents over a 12-year period and demonstrates a good safety record on this part of the R122 (Clonard/Naul Road).

Further east along Clonard Road, there has been one minor accidents recorded at Junction 6 (Millfield Shopping Centre Roundabout). This is shown on Figure 12.11 overleaf.

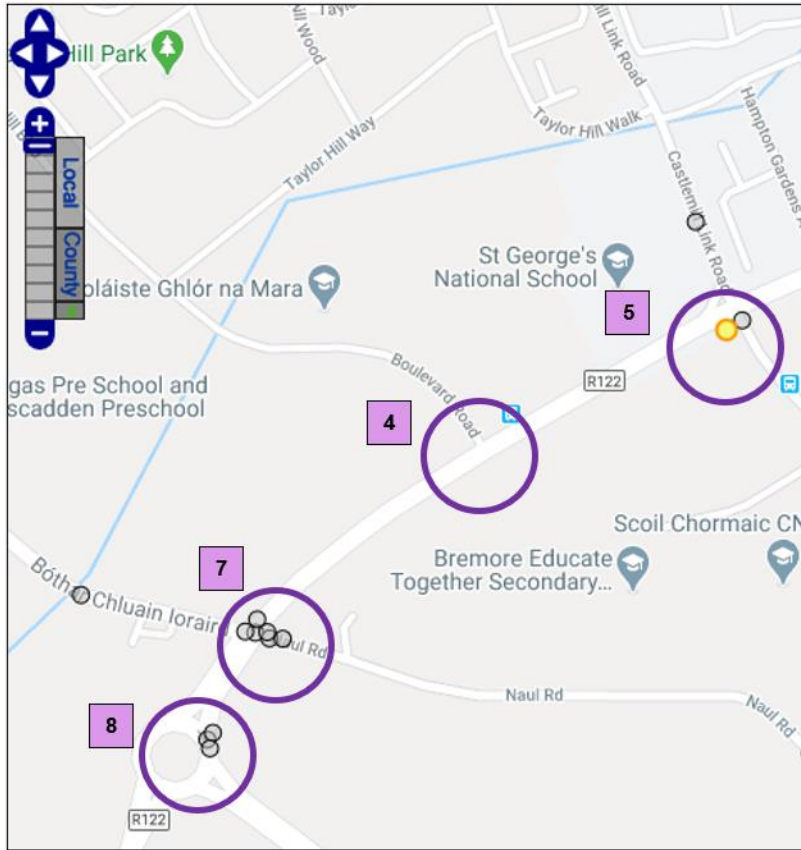


Figure 12.10 Part 1 - Location of Collisions (RSA 2005 – 2016)

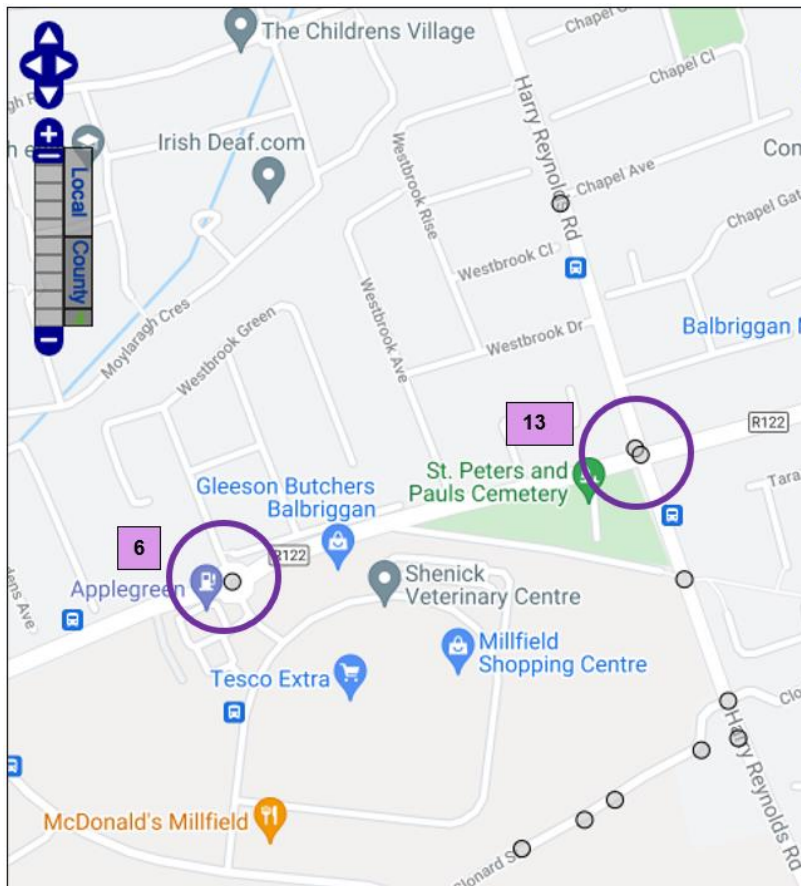


Figure 12.11 Part 2 - Location of Collisions (RSA 2005 – 2016)

At Junction 13 (Chapel Street / HRR signalised cross-roads), there has been two minor accidents. None of the accidents have involved vulnerable road users such as pedestrians or cyclists.

Based on the above, it is not considered that there is an existing road safety problem with these two junctions.

At Junction 11 (Drogheda Road / Hamlet Lane) there have been eight accidents recorded between 2005 and 2016 as shown in Figure 12.12 below:

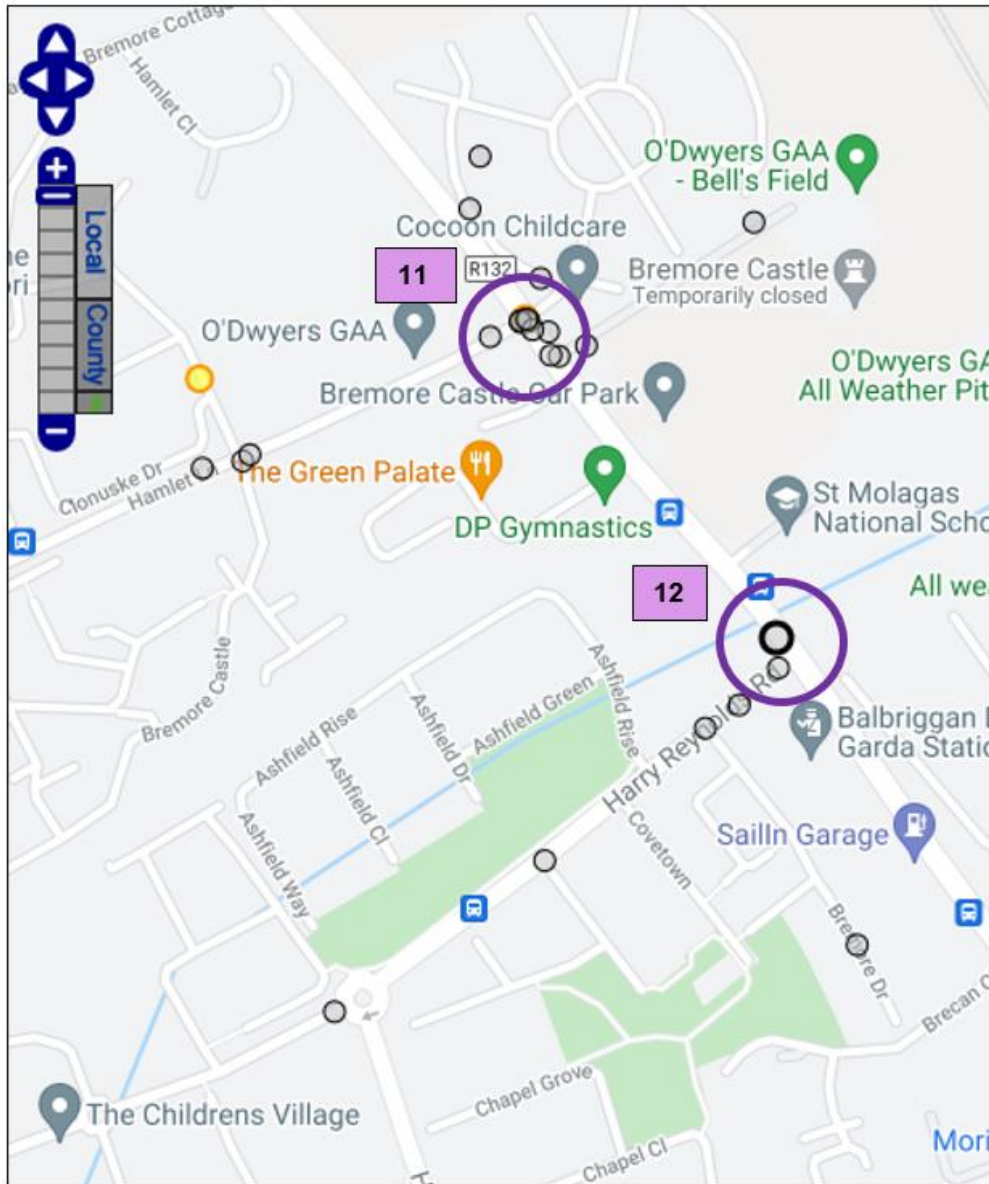


Figure 12.12 Part 3 - Location of Collisions (RSA 2005 – 2016)

One of these was serious and involved a motorcycle. The other seven were all minor incidents, two of which involved pedestrians and one involved a pedal cycle.

There are two minor accidents recorded at Junction 12 (Drogheda Road / HRR) one of which involved a pedal cycle.

Given the frequency of the accidents at Junction 11, approximately one incident every other year, it is not considered that there is a road safety problem with this junction, nor Junction 12.

12.4 Characteristics of the Proposed Development

A full description of the proposed development is set out in Chapter 2 of this EIAR. The proposal comprises the construction of 564 no. dwellings across five character areas delivered over 4 Phases as shown in Figure 12.13 below.

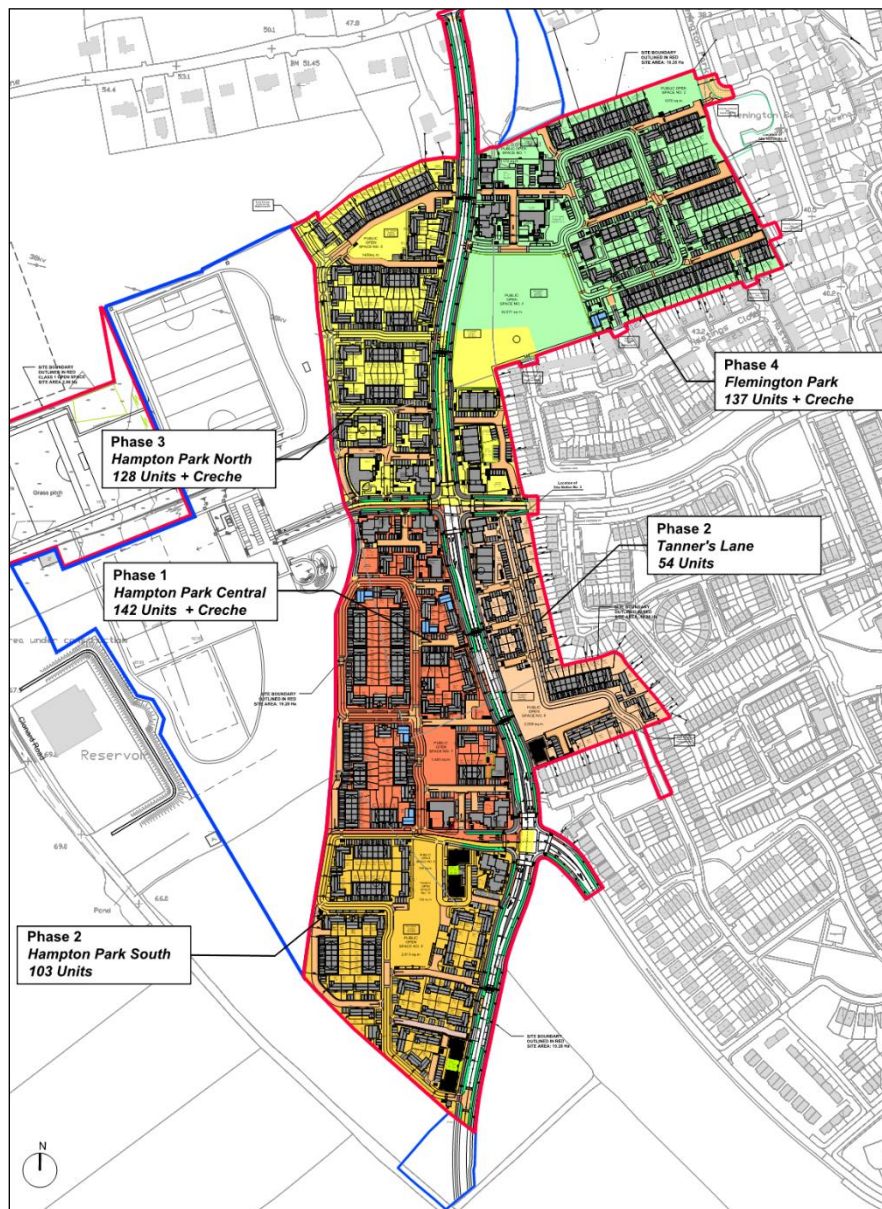


Figure 12.13 Proposed Masterplan Layout

The development mix as now proposed is summarised in Table 12.3 below, It should be note that the traffic modelling undertaken for TTA01 is based on 593 dwelling units and hence represents a robust and worst case assessment of traffic impact associated with the proposed development.

Phase	Houses	Duplexes	Apartments	Overall No. of Dwellings
Phase 1: Hampton Park Central	88	18	36	142
Phase 2: Hampton Park South	71	18	14	103

Phase 2: Tanner's Lane	36	12	6	54
Phase 3: Hampton Park North	84	24	20	128
Phase 4: Flemington Park	99	12	26	137
Total	378	84	102	564

Table 12.3 Proposed Character Areas / Phases and Mix

12.4.1 Internal Pedestrian and Cyclist Environment

The main vehicular accesses from Boulevard Road and Hamlet Lane will include 2.0m footpath and 1.75m cyclepath on both sides of the carriageway. These will connect to the existing pedestrian / cycle network in the area.

The main Spine Road through the development will also incorporate segregated 2.0m footpath and 1.75m cyclepath to be provided on both sides of the carriageway.

Main junctions along the Spine Road will include pedestrian crossings and cycle friendly infrastructure as shown in Figures 12.14 to 12.18 below:

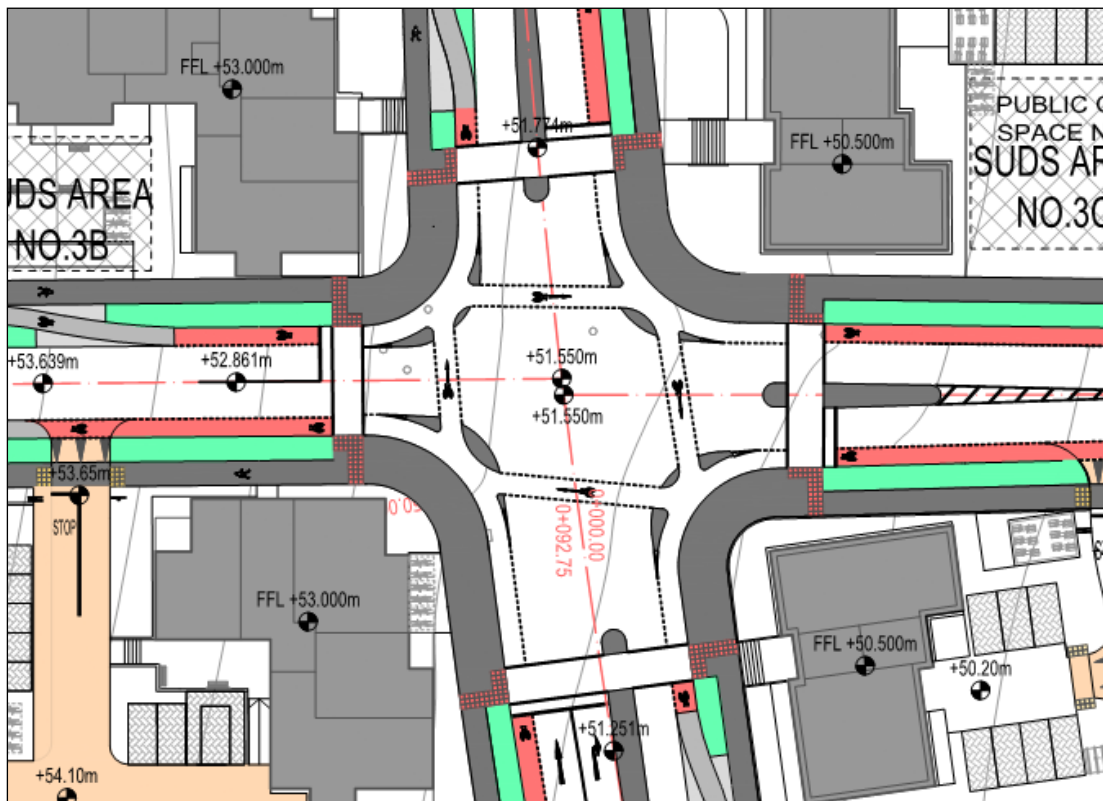


Figure 12.14 Hamlet Lane signalised crossroads with cycle protected infrastructure

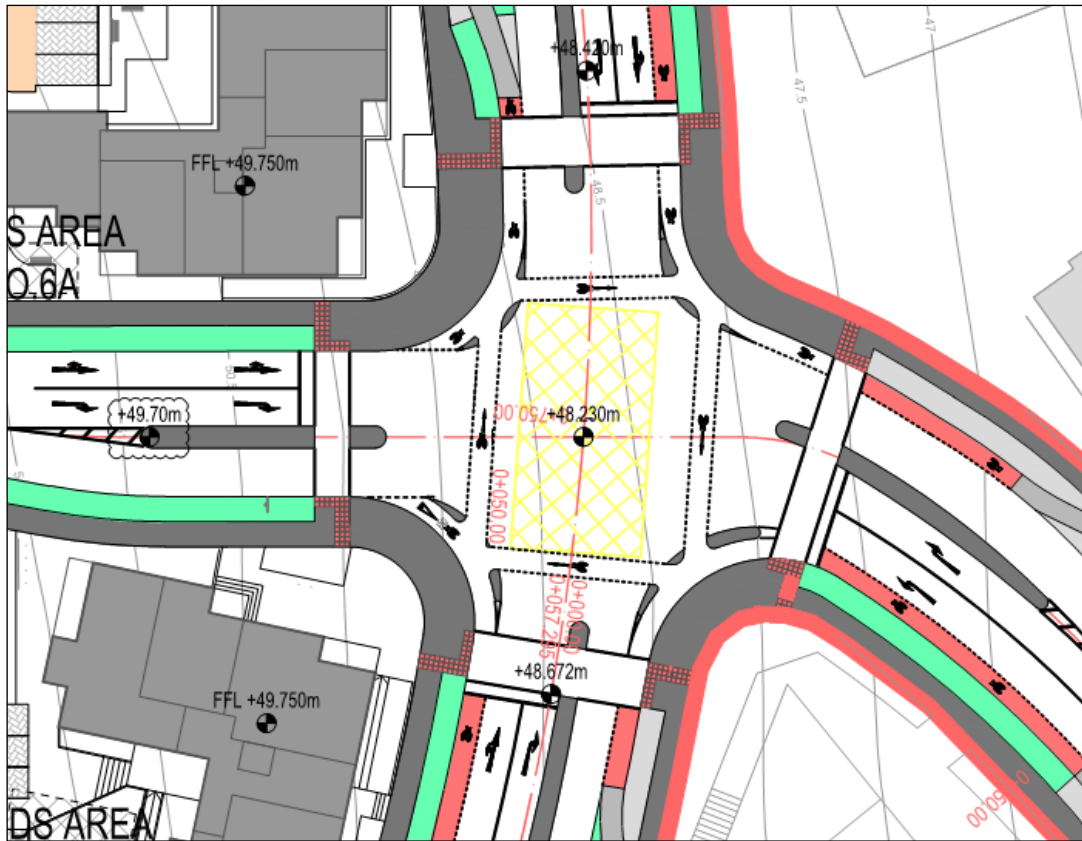


Figure 12.15 Boulevard road signalised crossroads with cycle protected infrastructure

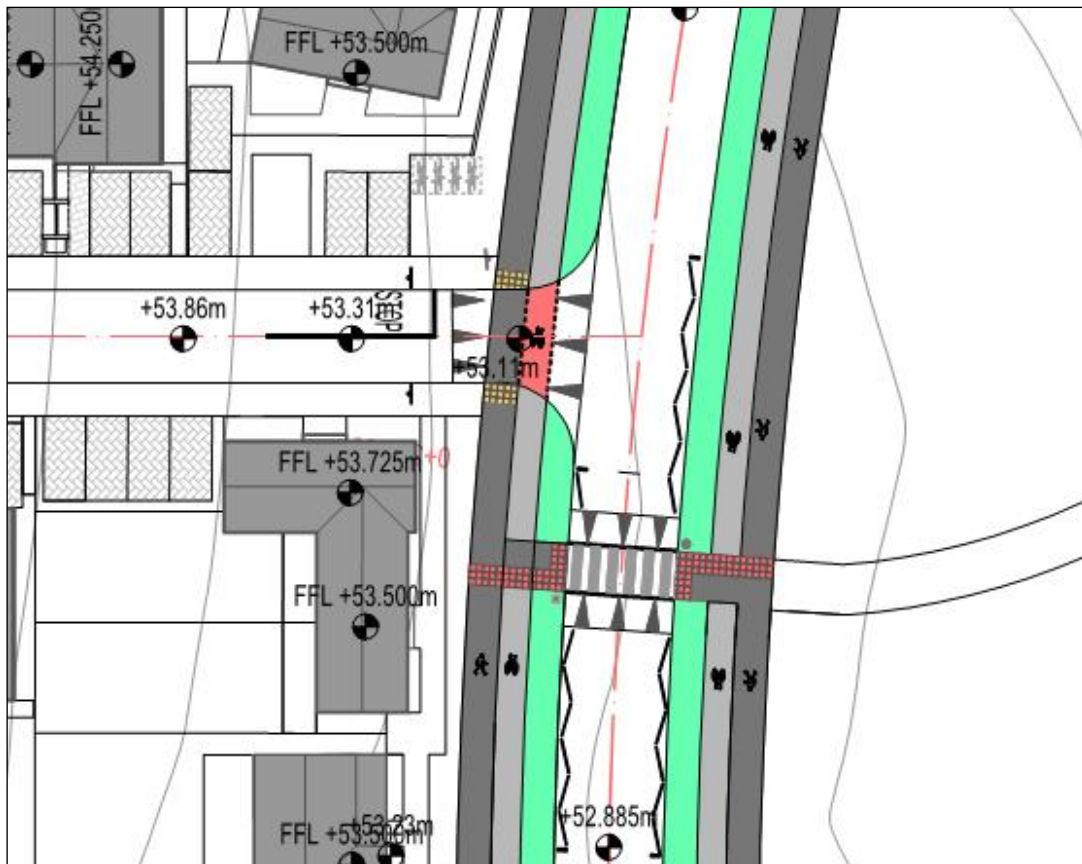


Figure 12.16 Proposed Priority T-Junction with Footway and Cycleway Crossover

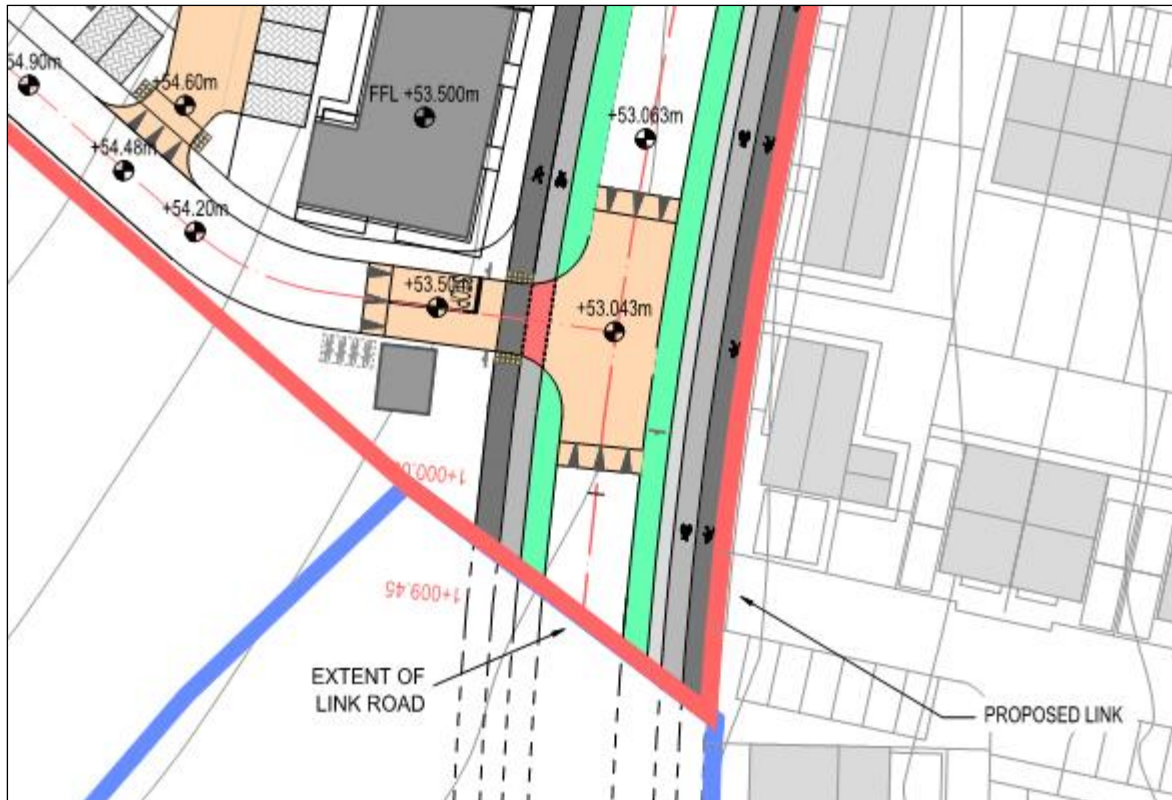


Figure 12.17 Proposed Priority T-Junction with Footway and Cycleway Crossover

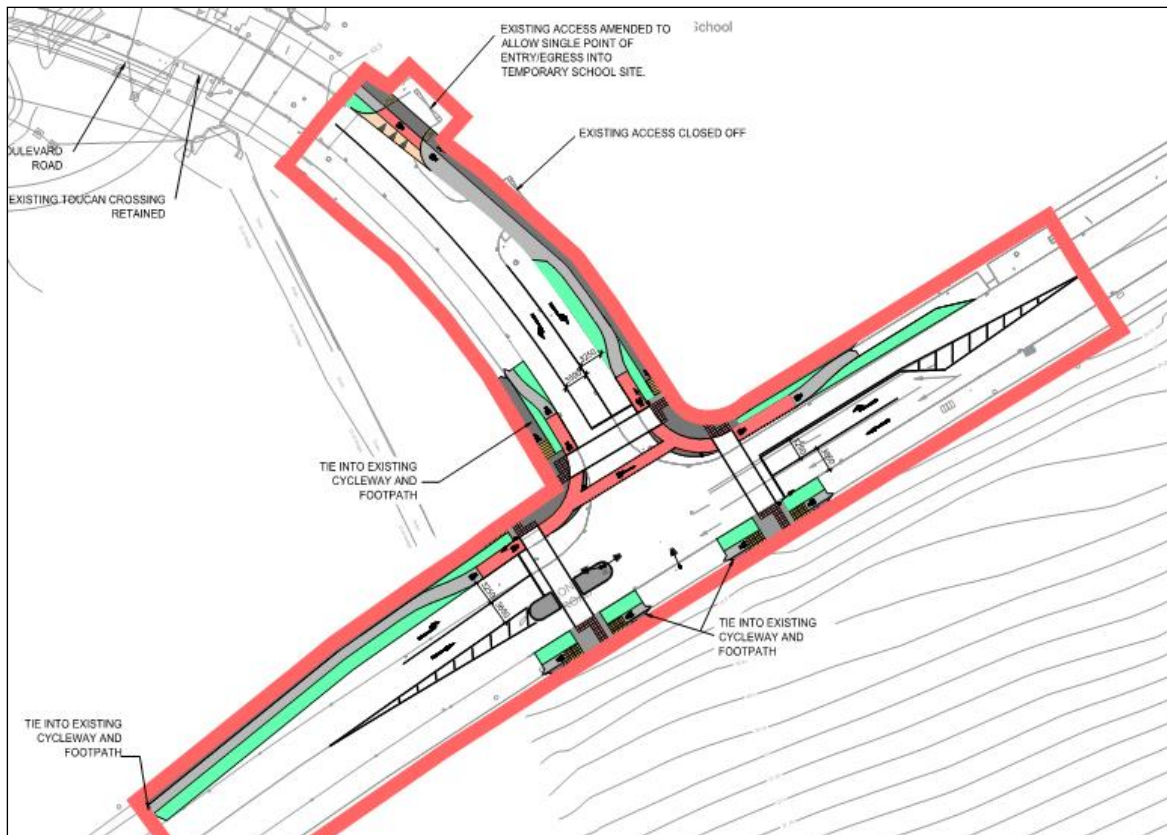


Figure 12.18 Proposed Boulevard Road and Clonard Road Signal Improvements With Cycle Protected Infrastructure

In addition to the crossing facilities at the signalised junctions, zebra crossing will be provided across the Spine Road between the junctions to aid safe pedestrian / cycle crossing of the Spine Road as shown in Figure 12.19 below:

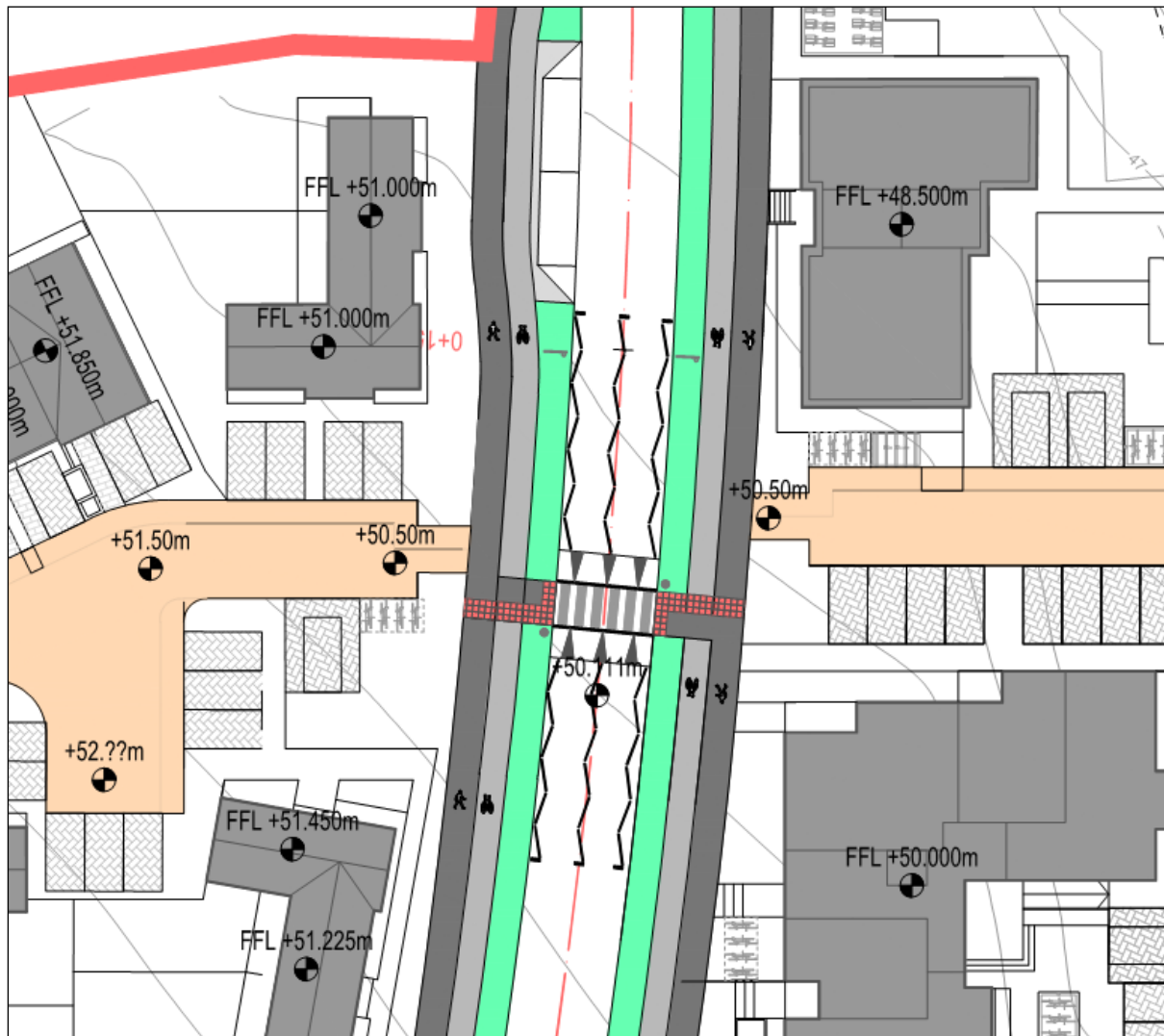


Figure 12.19 Typical Controlled Pedestrian / Cyclist Crossing of the Spine Road

Furthermore, it is expected that the traffic flows on the minor roads within the development will be relatively low and at slow speeds and so cyclists will therefore be able to travel quite safely on-street within the development site.

Thus, there will be a safe pedestrian and cycle links between the site and the various local facilities.

12.4.2 Proposed Road Access

The vehicular access to the residential development will be from an extension of the under-construction Boulevard Road, Flemington Lane, and existing Hamlet Lane, as well as a future link to Clonard Road / Naul Road as shown in Figure 12.20.

A significant number of walking and cycling access points will be provided to connect the development site to the existing urban areas to the east of the site and future possible development to the west. These are also shown in Figure 12.20:

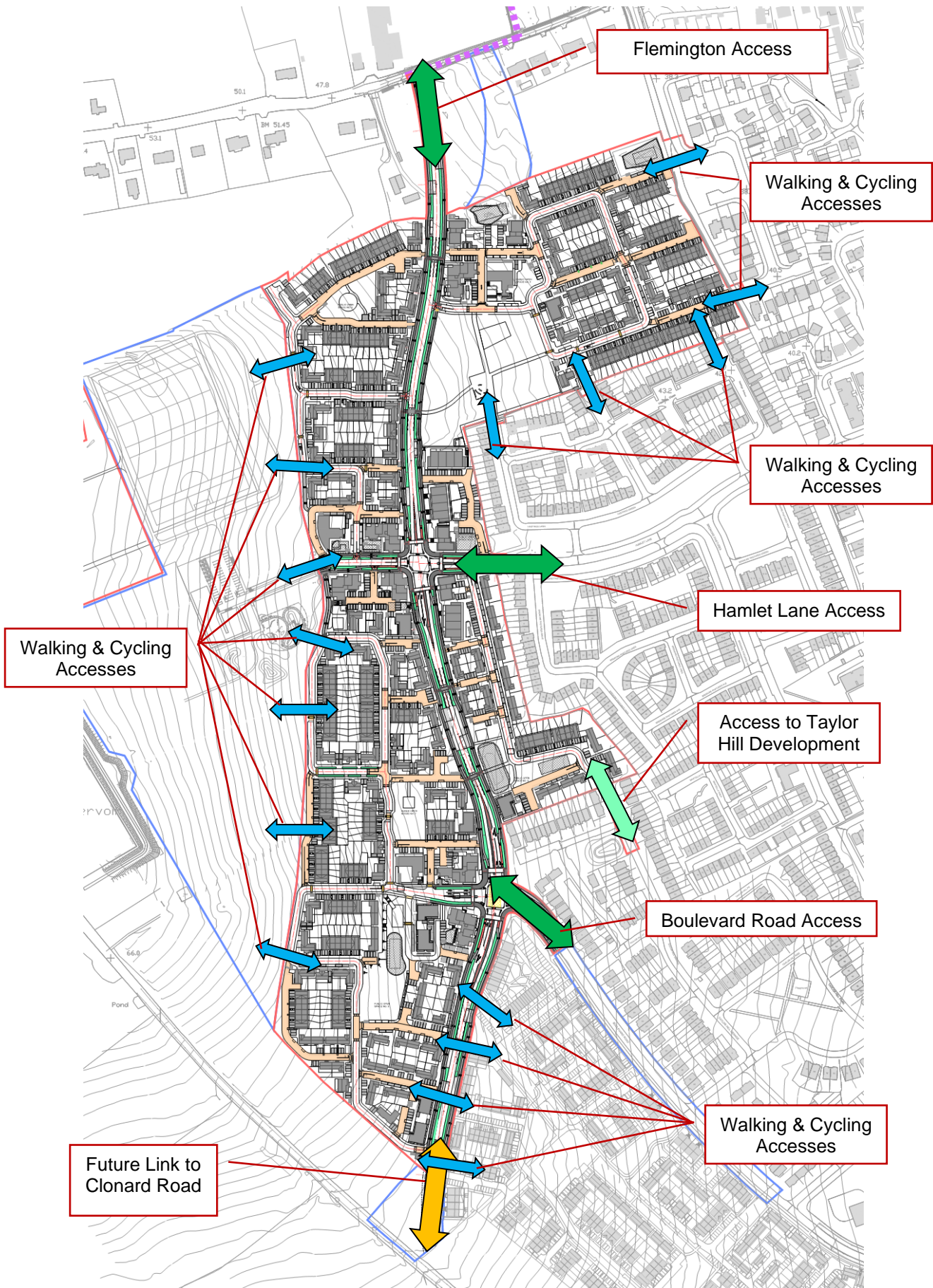


Figure 12.20 Proposed Site Access Locations

12.4.3 Proposed Future Road Improvements

The proposed development will also enable future links to Bridgefoot Road and Clonard Road to the south of the site. This will form the completion of the 'C' Ring Road. These works will be undertaken by others at some point in the future.

12.4.4 Parking

12.4.4.1 Residential Car Parking Requirements

Residential car parking provision for proposed residential developments are contained in the Fingal Development Plan 2023-2029 (FDP). However, as part of pre-application discussions, the Transport Planning Section (TPS) of FCC indicated that:

- one and two-bedroom dwellings, one parking space would be acceptable, and
- for three+ bedroom dwellings, two car parking spaces would be acceptable.

The FDP suggests that visitor parking be provided as one space per five dwellings.

The combine TPS and FDP visitor parking requirements and resultant parking provision are summarised in Table 12.4 below:

Dwelling Type	Parking per Dwelling	Number of Dwellings	Number of Spaces
1 or 2 Bed House	1	127	127
3 or more Bed House	2	251	502
1 Bed Duplex/Apartment	1	57	57
2 Bed Duplex/Apartment	1	103	103
3+ Duplex/Apartment	2	26	52
Visitor Parking	0.2	564	113
Total	-	564	954

Table 12.4 Residential Car Parking Requirement

The proposed development would require a total of 954 parking spaces.

12.4.4.2 Proposed Residential Car Parking Provision

As part of the proposals, the development will provide car parking as set out in Table 12.5 below:

Type	Number of Spaces
Residential Allocated	806
Visitor	94
Accessible Space (12% of visitor spaces)	11
Creche (Allocated)	7

Creche (Set Down)	9
Total	927

Table 12.5 Proposed Residential Car Parking Provision

The proposed parking provision shown in Table 12.5 is 927 car parking spaces. This is 27 spaces less than suggested by the TPS in their pre-application response. Nevertheless, whilst the proposed parking provision is lower than suggested by the TPS, it is still considered appropriate for the proposed development as the reduced car parking will encourage travel by more sustainable modes.

This is particularly true given the significant amount of links proposed to the existing surrounding residential areas as set out in Figure 12.20 above and the increased cycle parking proposed (see section 12.4.4.5 below) along with the improved cycle infrastructure on site (detailed in section 12.4.1 above). The walking and cycling permeability of the site to other urban areas of Balbriggan along with improved infrastructure will encourage travel by foot and cycle by both future residents and visitors alike.

12.4.4.3 Accessible Parking

The FDP states that one (or more) per 100 spaces should be reserved for accessible parking bays. This results in a requirement for at least ten (10) accessible parking bays for the proposed development.

The development will provide a total of 94 designated visitor car parking spaces 11 of which are designed as accessible spaces.

12.4.4.4 Electric Vehicle Parking

FCC have requested that 10% of car spaces should be reserved for electric vehicles with charging facilities. This would be a total of 93 no. EV spaces across the whole development.

However, the proposed development will provide a total of:

- 162no. EV spaces.

The proposed EV parking provision is greater than the minimum requirement.

To futureproof the development, all houses will be fully wired for electric vehicle charging with a blanked off panel at the output ready for subsequent installation by future occupants, if desired.

12.4.4.5 Cycle Parking

In their pre-application response, the Transport Planning Section (TPS) of Fingal County Council (FCC) suggested that two cycle parking spaces be provided per apartment or duplex.

However, the TPS did not provide any details on the parking provision for houses. Table 14.7 of The Fingal Development Plan 2023-2029 (FDP) suggests one bike space per one bedroom dwelling plus one per bedroom and one visitor space for every two dwellings as shown in an extract of Table 14.17 of the FDP below:

Table 14.17: Bicycle Parking Standards

Land Use Category	Minimum Bicycle Parking Standards	
	Long-Stay	Short-Stay
Residential (1–2 Bedroom)	1, plus 1 per bedroom	0.5 per unit (for apartment blocks only)
Residential (3+ Bedroom)	2, plus 1 per bedroom.	0.5 per unit (for apartment blocks only)

However, to make the most of the site's location to the town centre, along the existing cycle infrastructure in Balbriggan, the development will provide two cycle spaces per dwellings plus one visitor space for every five dwellings. This is regardless of unit type, such as house, apartment, or duplex.

This results in a requirement for 1,186 residents' cycle parking spaces and 119 visitors' spaces for the proposed development.

Similar to the EV spaces, the development will provide greater cycle parking provision than the minimum requirement as set out below:

- 1326 no. resident bicycle spaces;
- 640 no. visitor spaces; and
- 48 no. spaces allocated to creche bicycle parking.

Cycle parking facilities will be incorporated into the design of the various residential units. Resident and visitor cycle parking will be provided within the curtilage of each 'House' and 'Maisonette'. Secure bicycle parking (bicycle hoops) will be provided in the 'Duplex' and 'Apartment' type dwellings.

Whilst all garages and sheds will be covered, lockable and secure, additional security measures, such as wall bars or ground anchors will be provided if requested by future residents to further store and secure bicycles or motorcycles within garages or sheds.

12.4.5 DMURS Compliance

A report to assess compliance of the design with the requirements of DMURS (Design Manual for Urban Roads & Streets) has been prepared by MPA Consulting Engineers and this is included as **Appendix 12.3** with the EIAR.

The report assessed the scheme under the following headings and has concluded that the design of the scheme is in compliance with the requirements of DMURS.

- Movement Function
- Block Sizes
- Place Function
- Street Layout
- Streetscape
- Street Trees
- Wayfinding, Permeability and Legibility
- Traffic Calming
- Signage and Line Marking
- Materials and Finish
- Footways
- Pedestrian Crossing
- Corner Radii
- Cycle Facilities
- Carriageway Width

- Forward Visibility and Visibility Splay
- Parking & Set Down
- Planting

12.5 Potential Impact of The Proposed Development

12.5.1 Construction Phase – Traffic Impact

The construction traffic impacts of the proposed 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.

An Outline CTMP has been prepared by MPA Consulting Engineers (Reference 191004 – CTMP) , this has been provided here as **Appendix 12.4**. The Outline CTMP relies on information provided by DSPH and has estimated the following:

- Approximately 40 HGV arrivals and 40 HGV departures each day for the first two to three months (initial site stripping and site establishment works);
- Approximately 10-15 HGV arrivals and departures each day during the main construction phase.
- HGV deliveries will be scheduled to avoid the peak hours.
- Construction personnel are estimated to generate in the order of 80 car / van arrivals at the start of the working day and approximately 80 car / van departures at the end of the working day. Additional movements may occur during lunch breaks.

	Morning Peak (VPH)	Evening Peak (VPH)	Daily (Veh)
Cars / Vans	80	80	160
HGV	-	-	80
Total Trips	80	80	240

Table 12.6 Construction Traffic

The analysis in Table 12.13 (later in this Chapter) indicates that Clonard Road, within close proximity of the Boulevard Road junction, will carry in the order of 16,300 vehicles on a typical day in 2025 with committed development. As additional 240 daily construction vehicle movements (160 cars / vans and 80 HGVs) equate to an increase of approximately 1.5%.

The Transport Infrastructure Ireland document '*Traffic and Transport Assessment Guidelines*' states that the impact of any proposed development on the local road network is considered material when the level of traffic it generates increases flows by more than 10% on normal networks or 5% on congested networks.

Both Clonard Road and Boulevard Road are considered to be a normal network and therefore the flow increase during the construction phase is not considered material.

Overall, MPA Consulting Engineers is satisfied that the surrounding road network can comfortably accommodate the construction traffic and there is sufficient capacity in the surrounding junctions to accommodate this relatively modest and temporary increase in construction traffic.

Further, it should be acknowledged that construction personnel arriving in the morning and departing after work will typically do so in off-peak times. In addition, the HGV movements are estimated to reduce significantly (from 80 daily movements to 15 daily movements) after the first two to three months (site stripping and site establishment works).

A copy of the Outline CTMP is attached as **Appendix 12.4** of this EIAR.

12.5.2 Cumulative Development

Within this assessment, an allowance has been made for future development in the locale. In addition to Dean Swift traffic flows, the analysis has also considered:

- Future expansion of the local schools;
- Traffic flows associated with the committed developments at Taylors Hill 1 and Taylors Hill 2;
- Traffic flows associated the proposed Ladywell development; and
- Background traffic growth

12.5.2.1 Future Expansion of the Local Schools

There are five schools operating in the area, as shown on Figure 12.21 (note – School 2 is no longer in operation).



Figure 12.21 Local Schools

Locations

The following schools are operational:

- School 1 – Colaiste Ghlór na Mara;
- School 3 – St George’s National School
- School 4 – Balbriggan Educate Together National School
- School 5 – Scoil Chormaic Community National School
- School 6 – Bremeore Educate Together Secondary School

The existing number of pupils enrolled, staff employed and the capacity of these schools in February 2019 is set out in Table 12.7.

School Name	Enrolment Pupils and Staff	Capacity
1 – Colaiste Ghlór na Mara	Pupils – 239 Staff - 27	Pupils - 800 Staff - 60
2- Temporary Prefab Accommodation for Glór na Mara – Not in Use	-	-
3 – St George’s National School	Pupils - 418 Staff - 43	Pupils - 430 Staff - 45
4 – Balbriggan Educate Together National School	Pupils - 399 Staff - 41	Pupils - 400 Staff - 41
5 – Scoil Chormaic Community National School	Pupils - 554 Staff - 40	Pupils - 700 Staff - 53
6 – Bremeore Educate Together Secondary School	Pupils - 245 Staff - 32	Pupils - 1000 Staff - 70

Table 12.7 Local School Enrolments and Capacity

Schools 3 and 4 are already operating at or near to capacity and so no further trips need to be added to the network.

Schools 1, 5 and 6 are operating well below capacity and so additional trips need to be added to the network to assess the traffic impact when these schools are full.

Trip rates have been taken from the TRICS database and applied to the remaining capacity (pupils plus staff) at each of these schools.

The preceding analysis concludes that Schools 1, 5 and 6 could potentially add up to an additional 875/163 trips spread across the local road network in the AM / PM peak hours, as these schools reach their capacity.

A summary of the anticipated additional trips is set out in Table 12.8:

School Name	Additional AM Trips	Additional PM Trips
1 – Colaiste Ghlór na Mara	337	63
5 – Scoil Chormaic Community National School	90	16
6 – Bremeore Educate Together Secondary School	448	84
Total	875	163

Table 12.8 Gross Additional School Trips

These will not all be new trips as many of these vehicles will already be on the network travelling to other schools or as part of a journey to work. Furthermore, the location of School 1 in close proximity to the existing, committed and proposed residential development will mean that many of these trips will be made on foot or by cycle. For Schools 5 and 6, it is likely that a significant proportion of the additional trips will be made from the south and east and so will route via the 'C Ring' Road and Stephenstown.

Therefore, in order to avoid over estimating the impact of the additional school traffic on the junctions along Clonard Road, it has been assumed that only 20% of the trips associated with Schools 1 and 6 will actually be added to these junctions due to a combination of some of the trips already being on the network, the close proximity to residential development and the introduction of Smarter Travel measures as well as the routing of trips away from Clonard Road to the south and east.

The additional school trips have been assigned on to the road network using the distribution surveyed for School 1 in 2018.

The resultant additional number of trips associated with the schools is contained in Appendix D of the Traffic and Transport Assessment Report (191004-TTA01). The TTAR is attached as **Appendix 12.1** of this EIAR.

12.5.2.2 Committed Residential Development in the Locale

Glenveagh Homes presently have planning consent for two parcels of land and a planning application for a third parcel, which is being treated as 'committed' as follows:

- Taylor Hill Phase 1 (F15A/0437) – 137 units with permission, of which 88 were occupied when the traffic surveys were undertaken.
- Taylor Hill Phase 2 (F15A/0550) – 248 units to be delivered.
- Ladywell (F21A/0055) – 328 units to be delivered.

Thus, there are 713 residential units with permission that will be delivered, (i.e. the committed residential development that has not been captured by the traffic surveys). The locations of Taylor Hill Phases 1 and 2, Ladywell are shown in Figure 12.22 below:

Trip rates for the committed residential development have been taken from the TRICS database, which results in the number of trips presented in Table 12.9.

	AM Peak Hour		PM Peak Hour	
	Arrivals	Departures	Arrivals	Departures
Trip Rate	0.168	0.433	0.399	0.241
713 Dwellings	120	309	284	172

Table 12.9 Committed Residential Trips

The committed residential development trips have been assigned on to the road network using the distribution surveyed at Castlemill Link Road, i.e. for traffic entering and exiting the residential area north of Clonard Road, in 2018.

It is assumed that there will be a vehicular link between Phases 1 and 2 and that the traffic associated with the 297 committed residential units (F115A/0437 – 49 Units and F150/0550 – 248 units) will be split evenly (50/50) between Boulevard Road and Castlemill Link Road.

The Ladywell development will be accessed from Boulevard Road. It is assumed that all Ladywell development trips will use Boulevard Road to reach Clonard Road. The Ladywell trip distribution at Boulevard Road will replicate the turning proportions observed at Castlemill Link Road.



Figure 12.22 Taylor Hill and Ladywell Committed Residential Development

The resultant additional number of trips associated with the committed residential development is contained in Appendix F of Traffic and Transport Assessment Report (191004-TTA01). The TTAR is attached as **Appendix 12.1** of this EIAR.

12.5.2.3 Class 1 Public Open Space

It is noted that an area for Class 1 Public Open Space (POS) is identified as part of the North West Balbriggan masterplan area, to the east of Bridgefoot Road.

An allowance for additional trips generated by the Class 1 Public Open Space is not included in the traffic assessment as it is anticipated that these recreational trips will already be taking place on the road network and are thus included in the base traffic data.

In addition, the trips associated with the nearby residential developments, including the subject development, covers journeys undertaken for all purposes, including recreational, and so will also include some trips to / from the Class 1 Lands.

12.5.3 Operational Phase – Traffic Impact

12.5.3.1 Trip Generation

Creche Trips

Whilst the proposed development includes three creches, these are likely to serve the residents of the proposed development rather than the wider Balbriggan area, which already benefits from around 15

existing creches and childcare establishments. Therefore, creche trips associated with the proposed development will be linked with the proposed residential development trips. To avoid double counting trips, creche trips are not considered as impacting on the wider transport network.

Residential Trips

The traffic impact of the development is dependent on the background traffic on the local road network, the capacity of the existing junctions and the amount of additional traffic generated as a consequence of the development proposal and other committed developments.

Trip rates have been calculated by interrogating the TRICS database and the relevant trip rates for the Dean Swift development are set out in Table 12.10 **Error! Reference source not found..**

	Morning Peak Hour 8:00am – 9:00am		Evening Peak Hour 5:00pm – 6:00pm		Daily
	Arrivals	Departures	Arrivals	Departures	Two-Way
Houses Privately Owned' Trip per dwelling Rate	0.164	0.534	0.446	0.271	6.294
Flats Privately Owned' Trip Rate per Dwelling	0.041	0.142	0.193	0.101	2.009
Duplex Trip Rate (Interpolated)	0.103	0.338	0.320	0.186	4.152

Table 12.10 Trip Rates

For the purpose of calculating the development trip generation, the following has been assumed:

- Dwellings, described as 'Houses' in Table 12.4 have been assessed using the TRICS trip generation rate for 'Houses Privately Owned';
- Dwellings described as 'Apartments' in Table 12.4 have been assessed using the TRICS trip generation rate for 'Flats Privately Owned';
- Dwellings described as 'Duplex Apartments' in Table 12.4 have been assessed using an interpolated Duplex Trip Rate calculated as an average between the house and house and apartment trip rates.

The TTAR (191004-TTA01) prepared for Dean Swift is based on a development mix comprising 393 houses, 88 duplexes and 112 apartments providing a total of 593 dwellings. These trip rates have been applied to the proposed development and the resultant number of trips are shown in Table 12.11

	Morning Peak Hour 8:00am – 9:00am		Evening Peak Hour 5:00pm – 6:00pm		Daily
	Arrivals (VPH)	Departures (VPH)	Arrivals (VPH)	Departures (VPH)	Two-Way (Veh)
'Houses Privately Owned' 393 Dwellings	64	210	175	107	2,474
'Flats Privately Owned' 88 Dwellings	4	12	17	9	177
Duplex 112 Dwellings	13	41	39	23	507
TOTAL (593 Dwellings)	81	263	231	139	3,158

Table 12.11 Dean Swift Vehicle Trip Generation

Since the writing the TTA01 Report, the development mix has changed, and Table 12.12 shows the revised Trip Generation based on the new residential mix.

Tables 12.11 and 12.12 demonstrate that the revised development mix would generate fewer trips in the peak hours and across the day, almost 6% less, than what has been assessed within the September 2021 TTAR (191004-TTA01). Thus the September 2021 TTAR provides a “worst case” assessment of development vehicle trips which are referenced in the remainder of this Chapter.

	Morning Peak Hour 8:00am – 9:00am		Evening Peak Hour 5:00pm – 6:00pm		Daily
	Arrivals (VPH)	Departures (VPH)	Arrivals (VPH)	Departures (VPH)	Two-Way (Veh)
'Houses Privately Owned' 378 Dwellings	62	202	169	102	2,379
'Flats Privately Owned' 84 Dwellings	3	12	16	8	169
Duplex 102 Dwellings	11	34	33	19	424
TOTAL (564 Dwellings)	76	248	218	129	2,972

Table 12.12 Dean Swift Vehicle Trip Generation

As noted in 191004-TTA01, additional trips have not been added for the Class 1 Lands as it is anticipated that these trips are already accounted for when calculating the residential trips which include trips for leisure purposes.

12.5.3.2 Trip Distribution

Whilst the proposed development has three points of access to the major road network, the major trip destinations, such as the town centre and the M1 Motorway, are accessed via roads to the south of the site.

The trip distribution has therefore been assigned as 80% of development trips using Boulevard Road whilst the remaining 20% of development trips would use Hamlet Road or Flemington Lane. The September 2021 TTA Report (191004-TTA01) was prepared on the basis that a link to Flemington Lane would be provided by others in the future, Therefore all development trips heading north, 5% of development trips, would have done so via Hamlet Lane, therefore the assessments undertaken in 191004-TTA01 are considered to be “worst case”.

At Junction 4 (Clonard Road / Boulevard Road), the 80% of residential development trips have been assigned on to the road network using the distribution surveyed at Junction 5 (Clonard Road /Castlemill Link Road), i.e. for traffic entering and exiting the residential area north of Clonard Road, in 2018. This distribution has then been applied to the Boulevard Road/Clonard junction as shown in Figure 12.23 below:

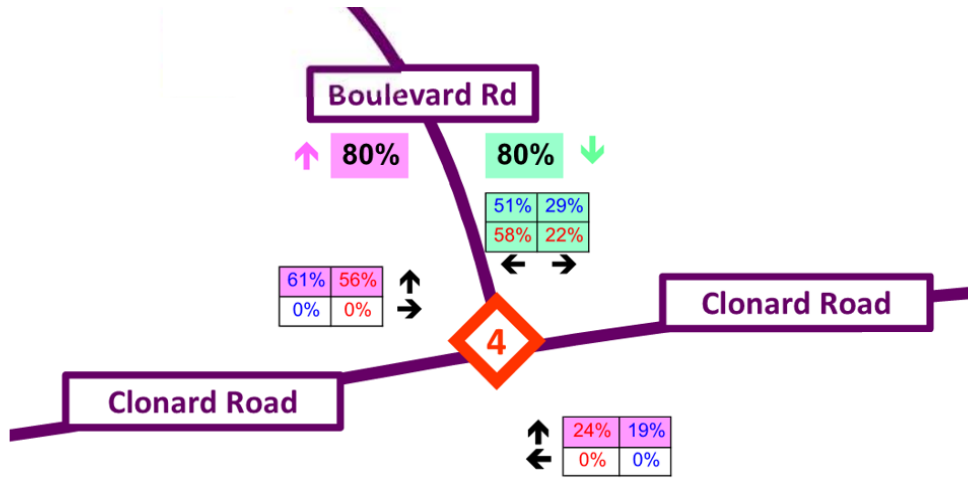


Figure 12.23 Trip Distribution at Junction 5 – Clonard Road / Boulevard Road

The trips generated by the development have been assigned on to the wider road network using the distributions identified in the traffic surveys.

12.5.3.3 Area Wide Traffic Impact

An Area Wide Traffic Model has been built to identify the percentage impact of the proposed development at each of these junctions, as shown in Figure 12.24.

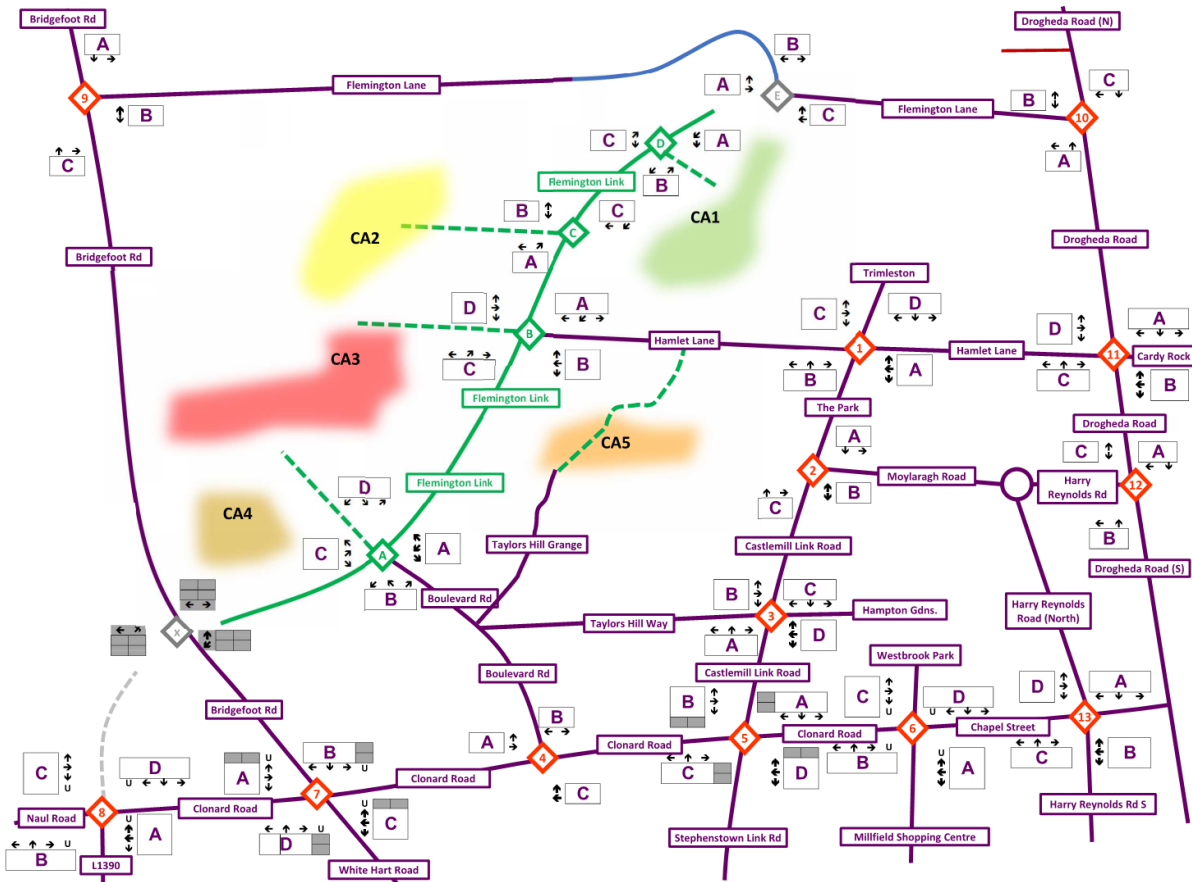


Figure 12.24 Area Wide Traffic Model

In accordance with the TII's 'Traffic & Transport Assessment Guidelines' (TTAG), the proportional increase in traffic levels at the junctions has been assessed using the Area Wide Traffic Model.

Table 12.13 below shows the percentage increase in traffic flows at the 13 junctions within the study area as a result of the proposed development.

Junction	2040 + Committed Development Base Junction Traffic Flow (AM/PM)	2040 + Com Dev + Development Base Junction Traffic Flow (AM/PM)	% Increase (AM/PM)
1	723 / 601	790 / 673	9% / 12%
2	889 / 775	939 / 829	6% / 7%
3	1,006 / 830	1,006 / 830	0% / 0%
4	2,099 / 1,900	2,366 / 2187	13% / 15%
5	2178 / 1990	2251 / 2072	3% / 4%
6	1455 / 1465	1529 / 1546	5% / 6%
7	2095 / 2072	2288 / 2278	9% / 10%
8	2462 / 2354	2655 / 2559	8% / 9%
9	615 / 486	615 / 486	0% / 0%
10	569 / 832	586 / 850	3% / 2%
11	1203 / 1211	1219 / 1229	1% / 1%
12	1335 / 1341	1362 / 1370	2% / 2%
13	1556 / 1356	1637 / 1435	5% / 12%

Table 12.13 Proportional Increase in Traffic Volumes at Junctions within Study Area

The TTAG identifies that junctions with an increase of 5% to 10% and over should be assessed in further detail. What is more, FCC have referenced that junctions experiencing a 2.5% increase in traffic volumes should be assessed further.

As such, junctions 1, 2, 4, 5, 6, 7, 8, 12 and 13 have been assessed using computer models as outlined in the remainder of this section.

However, Junction 7 (Bridgefoot Road / White Hart Lane) and Junction 10 (Drogheda Road / Flemington Lane) have not been assessed further even though the percentage increase is greater than 2.5%. This is because the increase in traffic volumes at these junction takes place on the through routes and does not involve any turning movements. Therefore, the junctions are unlikely to suffer any adverse effects. Furthermore, Junction 7 will only serve the existing properties at the southern end of Bridgefoot Road in the future as once the FLR is delivered the road will be for access only. Therefore, this increase in traffic volumes will only be experienced for a limited time as the FLR is expected to be delivered soon after 2025.

12.5.3.4 Future AADT Impact

The anticipated future Annual Average Daily Traffic (AADT) at the Hamlet Lane / Trimleston junction, the Boulevard Road / Clonard Road junction, and at the Castlemill Link Road / Clonard Road junction is presented in Table 12.14.

AADT values are provided for the following scenarios:

- Scenario 1 – 2025 base AADT plus committed development;
- Scenario 2 – 2025 base AADT plus committed development plus Dean Swift;
- Scenario 3 – 2040 base AADT plus committed development; and
- Scenario 4 – 2040 base AADT plus committed development plus Dean Swift;
-

Table 12.14 – Future AADT Traffic Flows on Adjacent Junctions

Junction	Road	2025 AADT + Com Dev (Veh)	2025 AADT + Com Dev + Dean Swift (Veh))	2040 AADT + Com Dev (Veh)	2040 AADT + Com Dev + Dean Swift (Veh))
Junction 1: Hamlet Lane / Barons Hall Rise / Trimleston	Hamlet Lane (E)	4,829	4,983	5,435	5,588
	The Park (S)	4,100	4,560	4,617	5,077
	Hamlet Lane (W)	3,462	4,075	3,905	4,518
	Trimleston (N)	372	372	418	418
Junction 4: Clonard Rd / Boulevard Junction	Clonard Rd West	17,824	19,577	19,707	21,460
	Boulevard Rd	4,159	6,610	4,287	6,738
	Clonard Rd East	16,361	17,058	18,216	18,914
Junction 5: Castlemill Link Rd / Clonard Rd Junction	Castlemill Link Rd	9,404	9,404	10,453	10,453
	Clonard Rd West	16,361	17,058	18,216	18,914
	Stephenstown Link Rd	5,319	5,319	5,955	5,955
	Clonard Rd East	9,742	10,440	10,826	11,524

A detailed summary of the future AADT at the critical junctions along the Clonard Road corridor is presented in **Appendix 12.5** of this EIAR.

12.6 Mitigation and Remedial Measures

12.6.1 Construction Phase

An Outline Construction Traffic Management Plan (CTMP) has been prepared by MPA Consulting Engineers and is attached as **Appendix 12.4** of this EIAR.

The Outline CTMP address construction phasing and measures that can be adopted to minimise any effects on road users.

Post planning, a detailed Construction Traffic Management Plan will be prepared by DSPH expanding on the preliminary plan, and the document will be submitted for approval to Fingal County Council Road prior to the commencement of any construction works.

This plan 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.

To minimise disruption to the surrounding environment, the following mitigation measures will be implemented:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths, and roads;
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel;
- A dedicated 'construction' site access / egress junction will be provided to Boulevard Road during the construction phase;
- Provision of adequate on-site parking and compounding to ensure that there is no overflow of construction traffic / parking onto the local network;
- Site offices and compound will be located within the site boundary. The site will be able to accommodate employee and visitor parking throughout the construction period;
- A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas;
- A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with the local authority prior to the commencement of construction activities;
- Truck wheel washes will be installed at the site entrances if deemed necessary and any specific recommendations with regard to construction traffic management made by the Local Authority will be adhered to; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. from the site will be removed off site.

DSPH will be required to 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 impacts of the construction phase can be appropriately managed.

12.6.2 Operational Phase

Balbriggan provides suitable infrastructure and transport services to enable travel by sustainable modes. 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 Mobility Management Plan Framework has been prepared by MPA Consulting Engineers for the proposed development (reference document 191004-MMP). This has been included as **Appendix 12.6** of this EIAR.

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.

A robust Framework can play a significant role in reducing the transport impacts of a development, though critical to its success is the commitment of residents, the local authority, and other interested parties to ensuring its implementation and progress.

12.7 Predicted Impact of the Proposed Development

12.7.1 Construction Phase

Provided that suitable mitigation measures and management procedures are incorporated during the construction phase, the residual impact on the local receiving environment is expected to be temporary in nature and slight in terms of impact.

12.7.2 Operational Phase

12.7.2.1 Traffic Impact

Eight external junctions have been assessed in detail using industry standard junction modelling software. These junctions are listed below and also shown in Figure 12.25 overleaf:

- Junction 1 – Hamlet Lane / The Park / Trimleston (PICADY)
- Junction 2 – Castlemill Link Road / Moylaragh Road / The Park (LINSIG)
- Junction 4 – Clonard Road / Boulevard Road Junction (PICADY and ARCADY)
- Junction 5 – Clonard Road / Castlemill Link Road Junction (LINSIG)
- Junction 6 – Clonard Road / Millfield Shopping Centre Roundabout (ARCADY)
- Junction 8 – Naul Road / L1390 Roundabout (ARCADY)
- Junction 12 – Drogheda Road / Harry Reynolds Road (LINSIG)
- Junction 13 – Chapel Street / Harry Reynolds Road (LINSIG)

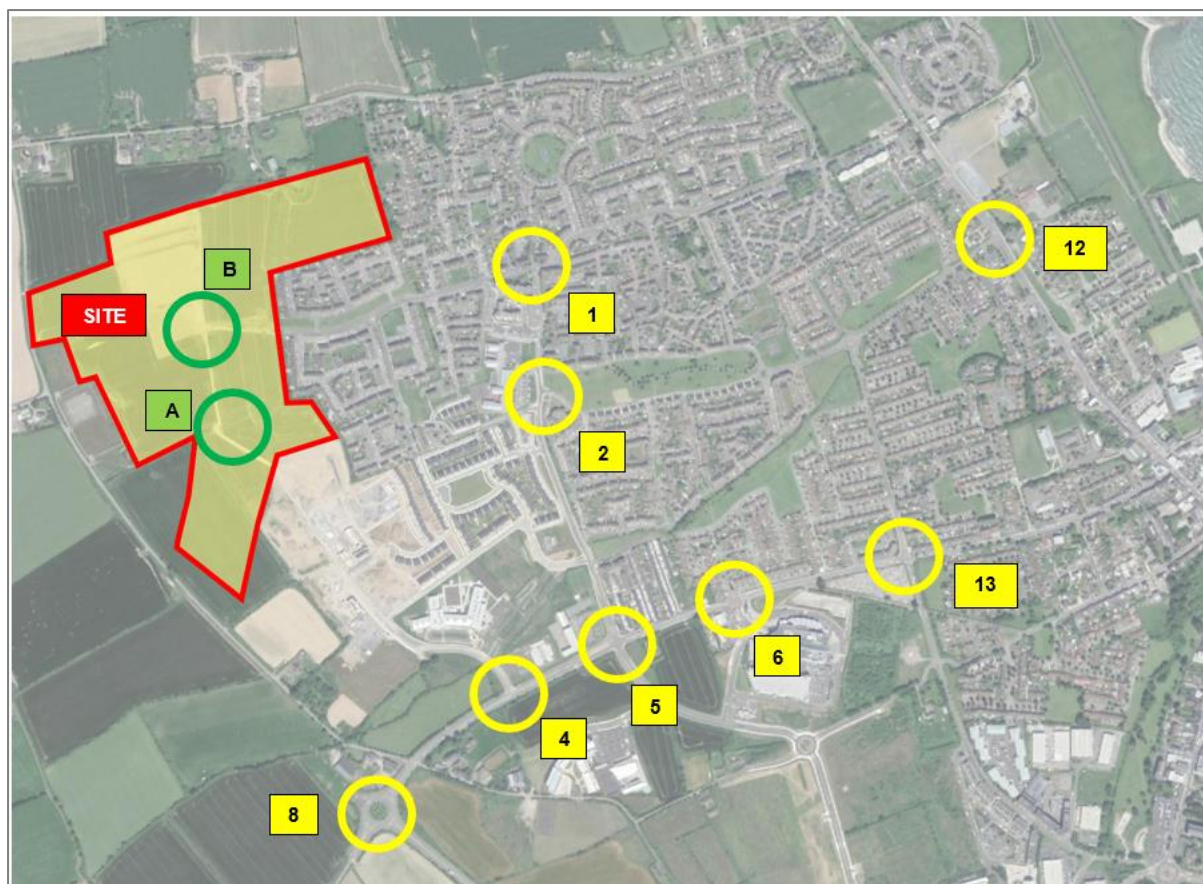


Figure 12.25 Location of Junction Assessments

The junctions have been assessed using the Junctions 9 software package that includes ARCADY 9 and PICADY 9 as the 'Roundabout' and 'Priority Intersection' modules and using LINSIG to assesses the operational performance of signalised junctions.

The model parameters and measurements have been compiled using topographical survey, Ordnance Survey data, and aerial photography.

Assessment Scenarios

These seven junctions have been assessed in the following scenarios:

- Scenario 1: 2025 Base + Committed Development;
- Scenario 2: 2025 Base + Committed Development + Proposed Development;
- Scenario 3: 2040 Base + Committed Development; and
- Scenario 4: 2040 Base + Committed Development + Proposed Development.

Traffic Growth

Traffic growth has been calculated using the growth factors contained in the TII '*Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections PE-PAG-02017*' (May 2019).

Balbriggan is located in non-metropolitan County Dublin in the Project Appraisal Guidelines.

The low growth rate factor has been used to determine traffic growth due to the large amount of development traffic already being added to avoid double-counting as development is an important component of traffic growth along with car ownership and other economic factors.

Therefore, an annual growth rate of 1.0163 for light vehicles will be used in the Transport Assessment, using the rates contained in Table 6.2 (for 2016-2030) of the Project Appraisal Guidelines.

County	Low Sensitivity Growth Rates						Central Growth Rates						High Sensitivity Growth Rates					
	2016-2030		2030-2040		2040-2050		2016-2030		2030-2040		2040-2050		2016-2030		2030-2040		2040-2050	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Dublin	1.0163	1.0303	1.0046	1.0123	1.0036	1.0143	1.0180	1.0317	1.0062	1.0139	1.0050	1.0158	1.0211	1.0348	1.0100	1.0170	1.0099	1.0250
Kildare	1.0180	1.0363	1.0044	1.0135	1.0035	1.0169	1.0197	1.0378	1.0062	1.0155	1.0053	1.0187	1.0229	1.0413	1.0098	1.0191	1.0107	1.0283
Laois	1.0130	1.0265	1.003	1.0105	1.0018	1.0136	1.0147	1.0280	1.0047	1.0125	1.0036	1.0155	1.0179	1.0314	1.0082	1.0160	1.0090	1.0248
Longford	1.0119	1.0298	1.0019	1.0104	1.0000	1.0138	1.0134	1.0313	1.0038	1.0124	1.0027	1.0157	1.0167	1.0347	1.0072	1.0161	1.0073	1.0256
Louth	1.0134	1.0347	1.0054	1.0153	1.0048	1.0180	1.0148	1.0363	1.0070	1.0174	1.0063	1.0198	1.0177	1.0397	1.0100	1.0211	1.0103	1.0295
Meath	1.0156	1.0349	1.0052	1.0164	1.0043	1.0189	1.0173	1.0365	1.0070	1.0186	1.0059	1.0207	1.0205	1.0400	1.0108	1.0226	1.0116	1.0304
Offlay	1.0103	1.0307	1.0021	1.0119	1.0014	1.0158	1.0118	1.0323	1.0042	1.0139	1.0033	1.0176	1.0152	1.0357	1.0081	1.0176	1.0100	1.0272
Westmeath	1.0145	1.0300	1.0042	1.0126	1.0033	1.0156	1.0161	1.0316	1.0062	1.0147	1.0053	1.0176	1.0194	1.0352	1.0101	1.0185	1.0100	1.0279
Wicklow	1.0140	1.0361	1.0033	1.0153	1.0029	1.0185	1.0157	1.0377	1.0051	1.0173	1.0047	1.0204	1.0189	1.0412	1.0091	1.0211	1.0110	1.0305
Cavan	1.0098	1.0295	1.0024	1.0108	1.0010	1.0140	1.0112	1.0311	1.0041	1.0127	1.0028	1.0158	1.0141	1.0345	1.0076	1.0164	1.0084	1.0256
Donegal	1.0097	1.0270	1.0024	1.0123	1.0017	1.0142	1.0111	1.0286	1.0039	1.0141	1.0035	1.0161	1.0139	1.0320	1.0072	1.0178	1.0094	1.0258
Galway	1.0243	1.0430	1.0087	1.0177	1.0088	1.0218	1.0259	1.0446	1.0109	1.0198	1.0105	1.0236	1.0294	1.0480	1.0148	1.0236	1.0181	1.0336
Leitrim	1.0044	1.0299	0.9973	1.0105	0.9927	1.0140	1.0060	1.0313	0.9990	1.0124	0.9971	1.0157	1.0090	1.0348	1.0025	1.0161	1.0029	1.0257
Mayo	1.0111	1.0314	1.0009	1.0128	1.0005	1.0173	1.0127	1.0330	1.0028	1.0148	1.0026	1.0192	1.0161	1.0364	1.0063	1.0186	1.0097	1.0290
Monaghan	1.0103	1.0236	1.0032	1.0093	1.0021	1.0119	1.0115	1.0252	1.0047	1.0112	1.0041	1.0138	1.0141	1.0285	1.0079	1.0147	1.0080	1.0234
Roscommon	1.0092	1.0267	1.0012	1.0115	1.0001	1.0152	1.0107	1.0284	1.0031	1.0135	1.0022	1.0172	1.0142	1.0318	1.0069	1.0174	1.0075	1.0270
Sligo	1.0133	1.0307	1.0028	1.0118	1.0018	1.0154	1.0147	1.0323	1.0045	1.0136	1.0041	1.0171	1.0178	1.0357	1.0082	1.0173	1.0107	1.0268
Carlow	1.0116	1.0309	1.0027	1.0124	1.0016	1.0161	1.0133	1.0324	1.0047	1.0144	1.0034	1.0178	1.0165	1.0359	1.0085	1.0180	1.0093	1.0275
Clare	1.0139	1.0402	1.0019	1.0138	1.0011	1.0179	1.0156	1.0417	1.0038	1.0157	1.0029	1.0197	1.0191	1.0451	1.0075	1.0193	1.0105	1.0292
Cork	1.0173	1.0361	1.0067	1.0141	1.0059	1.0181	1.0189	1.0377	1.0087	1.0160	1.0078	1.0200	1.0223	1.0411	1.0124	1.0197	1.0154	1.0297
Kerry	1.0094	1.0269	0.9990	1.0094	0.9983	1.0129	1.0111	1.0285	1.0011	1.0113	1.0000	1.0146	1.0144	1.0319	1.0048	1.0150	1.0079	1.0245
Kilkenny	1.0108	1.0253	1.0016	1.0109	1.0006	1.0147	1.0124	1.0268	1.0037	1.0129	1.0027	1.0166	1.0157	1.0302	1.0075	1.0166	1.0087	1.0261
Limerick	1.0199	1.0307	1.0071	1.0110	1.0069	1.0158	1.0215	1.0323	1.0092	1.0130	1.0088	1.0177	1.0249	1.0357	1.0129	1.0167	1.0163	1.0274
Tipperary	1.0102	1.0290	1.0019	1.0096	1.0008	1.0136	1.0119	1.0306	1.0037	1.0116	1.0027	1.0155	1.0152	1.0340	1.0073	1.0152	1.0084	1.0250
Waterford	1.0154	1.0342	1.0059	1.0157	1.0053	1.0203	1.0171	1.0358	1.0079	1.0179	1.0073	1.0220	1.0205	1.0393	1.0119	1.0218	1.0143	1.0319
Wexford	1.0051	1.0196	0.9999	1.0096	0.9989	1.0122	1.0068	1.0211	1.0022	1.0116	1.0006	1.0140	1.0100	1.0245	1.0060	1.0152	1.0077	1.0232

Figure 12.26 Table 6.2 Linked-Based Growth Rates: County annual Growth Rates (excluding Metropolitan area)

For this modelling exercise, traffic growth has been applied to factor the surveyed flows to 2025 to reflect the opening year of the development.

Further growth of 15 years after the opening year, as stated in the TTAG, has also been applied to the surveyed traffic flows. It should be noted that the future implementation of the FLR and further development, as part of the North West Balbriggan Masterplan, means that assessing the existing network in 2040 would not be representative of the future road network and traffic flows. Nevertheless, 2040 assessments have been undertaken to give some indication of the development impact should delivery of the planned road infrastructure is delayed.

12.7.2.2 Junction 1 – Hamlet Lane / The Park / Trimleston

Table 12.15 below provides a summary of the PICADY assessment of the existing priority junction of Hamlet Lane / The Park / Trimleston with the full outputs included in Appendix K of the TTAR (191004-TTA01).

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2025 + Com Dev								
Stream B-ACD	0.5	12.35	0.33	B	1	15.7	0.51	C
Stream A-BCD	0	6.46	0.01	A	0	6.27	0.01	A
Stream D-ABC	0.1	9.25	0.06	A	0	0	0	A
Stream C-ABD	0.2	8.31	0.16	A	0.1	6.98	0.1	A
2040 + Com Dev								

Stream B-ACD	0.6	13.72	0.38	B	1.4	18.62	0.58	C
Stream A-BCD	0	6.56	0.01	A	0	6.34	0.01	A
Stream D-ABC	0.1	9.62	0.07	A	0	0	0	A
Stream C-ABD	0.3	8.68	0.19	A	0.1	7.11	0.11	A
2025 + Com Dev + Dean Swift								
Stream B-ACD	0.6	13.01	0.36	B	1.4	18.13	0.58	C
Stream A-BCD	0	6.68	0.01	A	0	6.37	0.01	A
Stream D-ABC	0.1	9.51	0.06	A	0	0	0	A
Stream C-ABD	0.4	8.74	0.24	A	0.2	7.27	0.14	A
2040 + Com Dev + Dean Swift								
Stream B-ACD	0.7	14.65	0.41	B	1.8	22.35	0.65	C
Stream A-BCD	0	6.77	0.01	A	0	6.44	0.01	A
Stream D-ABC	0.1	9.89	0.08	A	0	0	0	A
Stream C-ABD	0.4	9.14	0.27	A	0.2	7.95	0.15	A

Table 12.15 PICADY Results for the Hamlet Lane / The Park / Trimleston Priority Crossroads

Where:

- Arm A – Hamlet Lane (East)
- Arm B – The Park
- Arm C – Hamlet Lane (West)
- Arm D - Trimleston

This table demonstrates that the junction operates within capacity for all assessment scenarios with acceptable levels of queuing and delays.

12.7.2.3 Junction 2 – Castlemill Link Road / Moylaragh Road / The Park (LINSIG)

Table 12.16 below provides a summary of the LINSIG assessment of the existing signalised junction of Castlemill Link Road / Moylaragh Road / The Park based on a 90-second cycle time. The full results are included in Appendix L of the TTAR (191004-TTA01).

This table demonstrates that the signalised junction will continue to operate within capacity for all scenarios assessed.

	AM			PM		
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
2025 + Com Dev						
The Park	8.0	35.8	60.8	5.1	42.6	53.9
Moylaragh Road	4.8	48.4	59.2	3.5	50.5	51.8
Castlemill Link Road	6.8	41.8	62.0	7.6	28.8	53.3
2040 + Com Dev						
The Park	9.5	38.7	68.9	5.8	44.7	60.3
Moylaragh Road	5.8	52.2	67.1	4.1	53.0	58.2

Castlemill Link Road	8.0	45.0	69.7	8.9	30.4	60.0
2025 + Com Dev + Proposed Development						
The Park	9.1	36.7	66.0	5.6	52.2	56.5
Moylaragh Road	5.2	49.9	62.8	4.4	48.7	56.5
Castlemill Link Road	7.0	44.2	65.1	8.2	32.6	58.9

2040 + Com Dev + Proposed Development						
The Park	10.7	40.0	73.6	6.6	47.2	66.0
Moylaragh Road	6.2	54.4	70.6	4.9	51.1	62.1
Castlemill Link Road	8.3	48.4	73.1	9.4	33.3	64.0

Table 12.16 LINSIG Results for the Existing Castlemill Link Road / Moylaragh Road / The Park

12.7.2.4 Junction 4 – Clonard Road / Boulevard Road**Existing Priority Junction**

Table 12.17 provides a summary of the PICADY assessment of the existing priority junction of Clonard Road/Boulevard Road whilst the full outputs are included in Appendix L of the TTAR.

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2025 Base + Com Dev								
Stream B-AC	65.2	712.28	1.46	F	2.9	65.59	0.77	F
Stream C-AB	0.2	7.84	0.16	A	0.1	8.73	0.12	A
2040 Base + Com Dev								
Stream B-AC	106.2	1345.79	1.81	F	7.8	164.71	0.97	F
Stream C-AB	0.2	8.48	0.18	A	0.2	9.48	0.13	A
2025 Base + Com Dev + Dean Swift								
Stream B-AC	303.8	3110.5	2.51	F	53	684.39	1.49	F
Stream C-AB	0.3	8.49	0.2	A	0.3	11.22	0.25	B
2040 Base + Com Dev + Dean Swift								
Stream B-AC	368.5	4037.22	3.1	F	80.8	1472.67	1.92	F
Stream C-AB	0.3	9.21	0.23	A	0.4	12.51	0.27	B

Table 12.17 PICADY Results of the Existing Clonard Road / Boulevard Road Junction

Where:

- Arm A – Clonard Road (West)
- Arm B – Boulevard Road
- Arm C – Clonard Road (East)

This table demonstrates that the existing junction would operate over capacity in 2025 with committed development during the morning peak hour with queues and delay experienced on Boulevard Road

(the minor). In the evening peak hour, whilst the Ratio of Flow to Capacity (RFC) is shown to be acceptable, the level of delays would still be excessive on Boulevard Road. The situation is exacerbated by 2040. The inclusion of proposed development trips sees a significant increase in queue lengths and delay on Boulevard Road.

Options to upgrade the junction have been considered, initially a roundabout and then a signal-controlled T-junction with cycle protection added.

Option 1: Proposed Roundabout Junction

One option to improve this junction (Clonard Road/Boulevard Road) is improved by the provision of a three-arm roundabout as shown below in Figure 12.27 and also in Appendix M of the TTAR (191004-TTA01).

The proposed has Toucan Crossings on all arms and is designed largely in line with recommendations in the National Cycle Manual. It is of the same geometry proposed by FCC for the proposed Harry Reynolds Road scheme roundabout at the Harry Reynolds Road / R132 junction.

Whilst the proposed roundabout arrangement would provide Toucan Crossing on all arms, the proposed roundabout is designed to be attractive to pedal cyclists by slowing vehicle speeds through the roundabout. This has been achieved by having narrow approach road half widths and entry widths where possible and reducing the circulatory width.

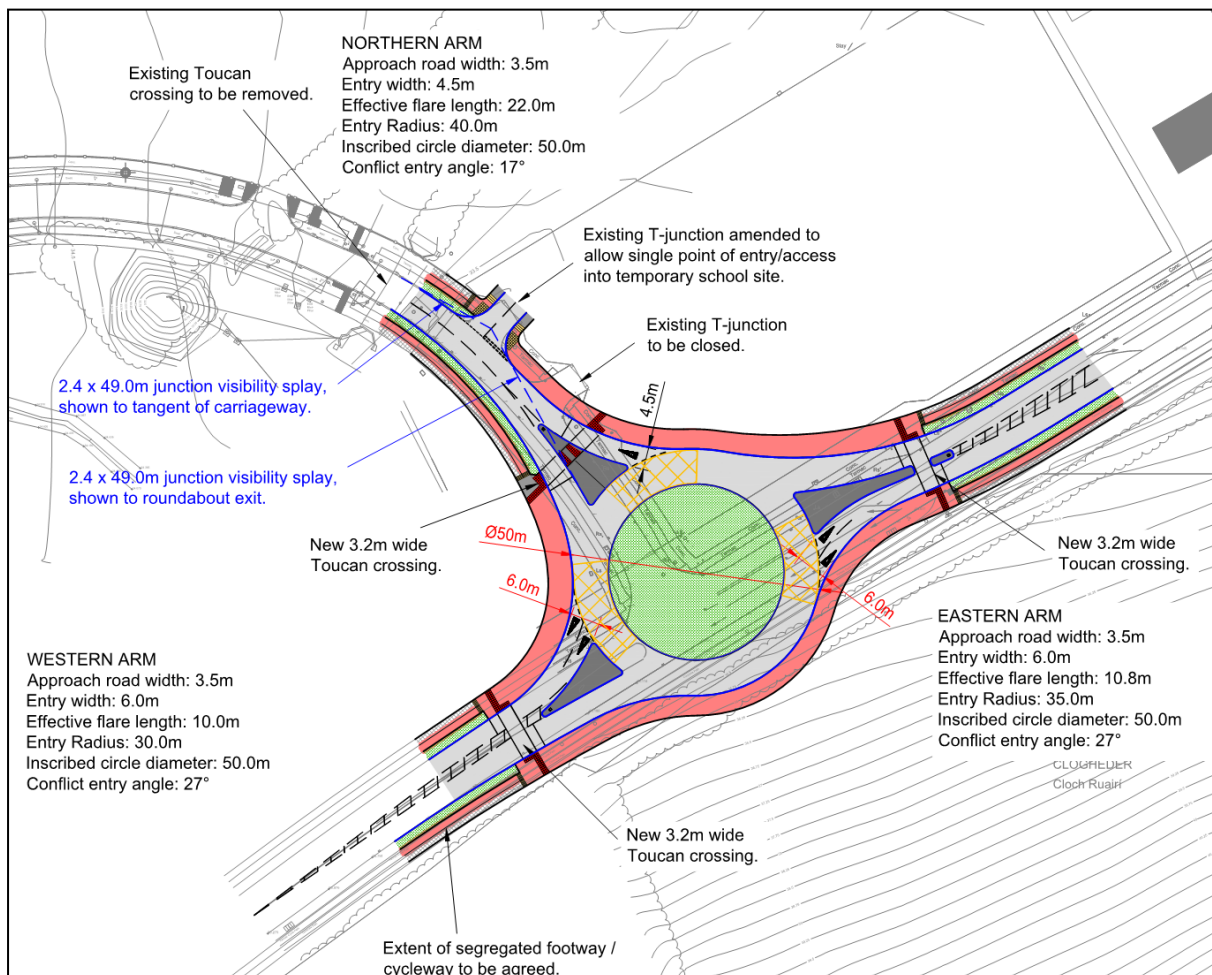


Figure 12.27 Proposed Clonard Road / Boulevard Road Three-Arm Roundabout

Table 12.18 summarises the ARCADY assessment of the proposed roundabout with the full outputs included in Appendix N of the TTA.

The results in Table 12.18 show that the proposed roundabout would result in improvement in the operational performance of the junction. All approaches, with the exception of Clonard Road (West), would have an RFC of less than 0.90. 0.91 and queues of less than 10 vehicles.

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2025 Base + Com Dev								
Clonard Road (West)	1.3	5.7	0.55	A	2.5	8.7	0.72	A
Boulevard Road	0.5	5.41	0.35	A	0.2	5	0.19	A
Clonard Road (East)	1.9	7.65	0.66	A	0.8	4.49	0.45	A
2040 Base + Com Dev								
Clonard Road (West)	1.7	6.71	0.62	A	3.8	11.78	0.79	B
Boulevard Road	0.6	5.99	0.38	A	0.3	5.53	0.21	A
Clonard Road (East)	2.8	9.94	0.74	A	1	4.95	0.5	A
2025 Base + Com Dev + Dean Swift								
Clonard Road (West)	1.5	6.26	0.59	A	4.9	14.97	0.84	B
Boulevard Road	1.3	8.04	0.57	A	0.5	5.98	0.33	A
Clonard Road (East)	2.6	10.12	0.72	B	1	5.06	0.5	A
2040 Base + Com Dev + Dean Swift								
Clonard Road (West)	2	7.49	0.66	A	9.1	26.07	0.91	D
Boulevard Road	1.6	9.38	0.61	A	0.5	6.73	0.36	A
Clonard Road (East)	4.1	14.44	0.81	B	1.2	5.65	0.55	A

Table 12.18 ARCADY Results for the proposed Clonard Road / Boulevard Road Roundabout

Clonard Road (West) would operate with an RFC of 0.91. It should be noted that an RFC of 0.91 (91%) is considered acceptable in this case and is lower than the 93% capacity suggested in 3.4.2 of DMURS where the creation of more compact roundabouts in favour of capacity is recommended.

Thus, the proposed implementation of a three-arm roundabout of the Clonard Road/Boulevard Road junction enables all of the traffic associated with the proposed development and committed development.

Option 2: Signalised T-Junction

At the request of FCC, an assessment of the existing consented signals has been carried out to establish if a cycle friendly signal-controlled option could be implemented at the junction.

An additional capacity assessment has been undertaken of the consented signalisation of the junction (F21/A0055) between Clonard Road and Boulevard Road which is proposed as part of the Glenveagh Homes Ladywell planning permission. The investigation established the number of additional of Dean Swift development trips that could pass through this junction before additional road infrastructure or other improvements are required.

The signalised T-junction is shown in Figure 12.28 overleaf and in drawing 191004-SK101 Rev P1 included in Appendix A of 191004-TTN02 included as **Appendix 12.1** of this EIAR. The proposed junction arrangement includes signal-controlled crossings on all arms including a central island on the Clonard Road (west) approach. An 'all red' traffic phase is called to allow pedestrians and cyclists to cross all arms of the junction.

As part of the Ladywell planning application, the supporting TIA identified that the proposed signalisation of the Clonard Road/Boulevard Road junction enables all of the traffic associated with the Ladywell development to be satisfactorily accommodated in advance of the delivery of the FLR.

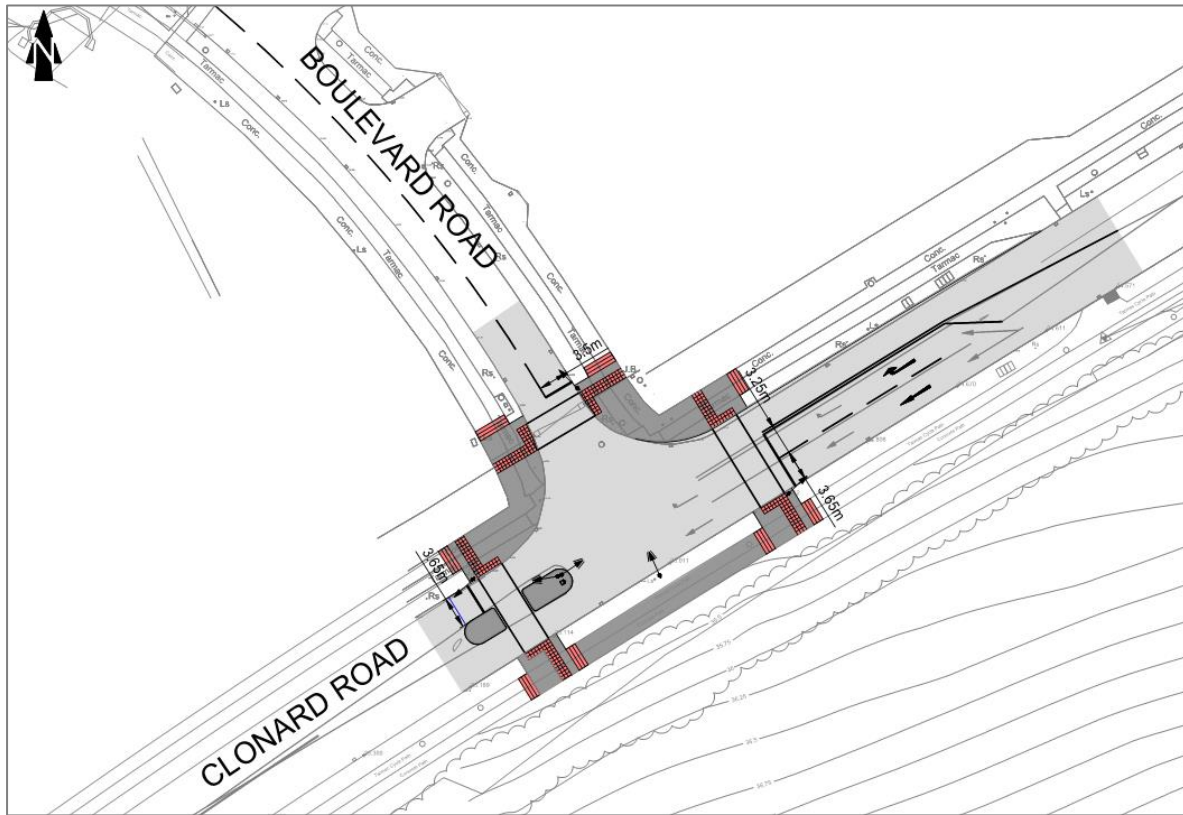


Figure 12.28 Extract of Drawing 191004-Sk101 Rev P1

Capacity Assessment

Methodology

As mentioned above the, the proposed signalisation of J4 would accommodate the Ladywell development trips ahead of the completion of the FLR.

A further assessment has been prepared to determine how many Dean Swift development trips, based on the initial proposed 593 units (mixed dwelling, duplex & apartments), could be accommodated by the consented J4 signalisation scheme. The assessment goes on to suggest further improvements to the consented signals scheme to provide additional capacity through the junction.

Trip assignment associated with the Dean Swift development assigns 80% of total development trips through J4. To determine what quantum of the Dean Swift development could be accommodated through the junction, assessments have been run based in incremental increases in the development as summarised in Table 12.19 below with flow diagrams included in Appendix B of 191004-TTA02 which is included as **Appendix 12.2** of this EIAR.:

Scenario	Percentage of Dean Swift Development
A	0%
B	20%
C	40%
D	60%

E	80%
F	100%

Table 12.19 Junction 4 Assessment Scenarios

The assessment years are taken to be 2025 and 2030.

LinSig Assessment: Consented Junction Arrangement (F21A/0055)

The full LinSig outputs for the consented scheme are included in Appendix A of 191004-TTA02 (included as **Appendix 12.2** of this EIAR) with a summary of the results provided in Table 12.20 below. The results displayed are maximum Degree of Saturation (DoS) on the most congested arm for that time period assessed.

Dean Swift Development Trips	Maximum DoS (Various Arms)			
	2025		2030	
	AM	PM	AM	PM
Scenario A 0%	89.6%	90.4%	93.8%	95.9%
Scenario B 20%	92.8%	93.7%	97.7%	99.4%
Scenario C 40%	96.2%	97.3%	100.7%	103.0%
Scenario D 60%	99.3%	100.8%	104.6%	106.6%
Scenario E 80%	102.0%	104.4%	106.8%	110.5%
Scenario F 100%	106.2%	108.3%	110.9%	112.9%

Table 12.20 Consented Layout: LinSig Results (Busiest Arm)

Table 12.20 shows that for Scenario A, i.e. no Dean Swift trips, the junction would operate at around 90% of capacity in 2025. In 2030, this goes up to nearly 96%. As would be expected, as the proportion of Dean Swift trips increases, the maximum DoS increases. In Scenario B, the maximum DoS is below 100% in both 2025 and 2030. For Scenario C, the DoS is over 100% in 2030 only. In Scenario E, the maximum DoS is around 100% in 2025 and marginally over in 2030. For Scenarios E and F, the maximum DoS is over 100% for both design years.

It should be noted that the assessment is based on the peak hours. At other times of the day the junction would operate satisfactorily.

Boulevard Road Junction – Consented Signals with Flared Approaches

The consented scheme is not able to accommodate the full Dean Swift development prior to completion of the FLR. Therefore an interim scheme has been designed which modifies the consented scheme to provide flared approaches on Clonard Road (West) and Boulevard Road. The full drawing, 191004-SK102 is included in Appendix A of 191004-TTA02 (included as **Appendix 12.2** of this EIAR) with an extract included in Figure 12.29. The flares are 30m long and can accommodate five cars.

The use of flared approaches allows the use of green light filter arrows which improve capacity at each approach.

Similar to the consented scheme, the junction would be kept compact without the need for provision of slip lanes or additional central pedestrian / cyclist islands. An 'all red' phase is included in the junction phasing to allow safe pedestrian and cyclist movements through the junction.

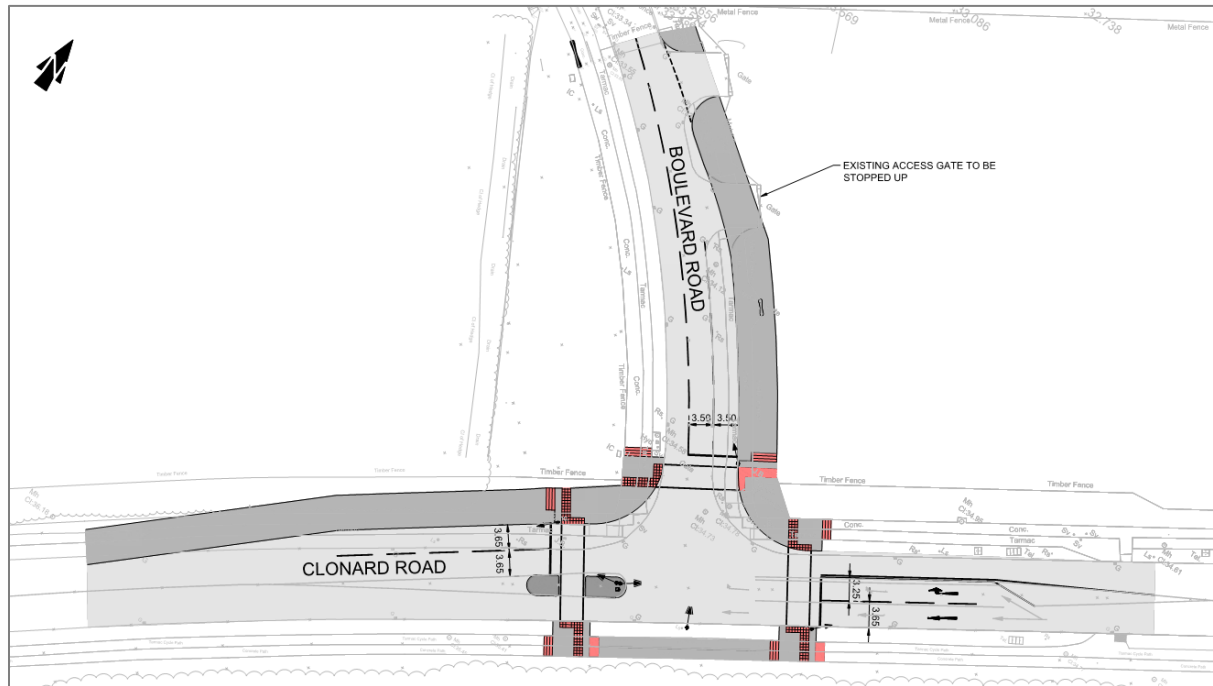


Figure 12.29 Consented Signals with Flared Approaches

LinSig Assessment: Consented Signals with Flared Approaches

The revised junction arrangement has been modelled using LinSig for the same assessment scenarios. The full LinSig outputs are included in Appendix A of 191004-TTA02 (included as **Appendix 12.2** of this EIAR) with the results summarised below:

Dean Swift Development Trips	Maximum DoS (Various Arms)			
	2025		2030	
	AM	PM	AM	PM
Scenario A 0%	77.1%	79.6%	80.8%	84.6%
Scenario B 20%	80.2%	82.3%	84.3%	87.4%
Scenario C 40%	83.2%	85.1%	87.4%	89.0%
Scenario D 60%	86.0%	87.9%	90.3%	91.8%
Scenario E 80%	88.9%	90.6%	93.1%	94.7%
Scenario F 100%	91.6%	92.9%	95.4%	97.5%

Table 12.21 Consented Layout with Flared Approached: LinSig results (busiest arm)

The results in Table 12.21 demonstrate that Boulevard Road would operate within 90% capacity in 2030 with 40% of Dean Swift developed. In 2025, the junction operates at 90% DoS and increases to around 94% DoS in 2030 for Scenario E (80% Dean Swift development).

With 100% Dean Swift development (Scenario F), the junction would operate with DoS between 92% and 98% for the 2025 and 2030 assessment years respectively.

As noted previously, the assessments are based on the worst-case peak hour assessments which account for only a proportion of the day and daily traffic movements. Outside of the peak hours the junction would operate satisfactorily.

Section 3.4.2 Traffic Congestion of the Design Manual for Urban Roads (DMURS) notes:

“A primary function of all transport policies has been to reduce the waste of resources caused by congestion. National and regional transport policies and plans have recognised that it is not feasible or sustainable to accommodate continued demand for car use. In contrast, sustainable modes (walking, cycling and public transport) can cater for very high volumes of movement in a far more efficient manner. Policies and plans, therefore, promote sustainable modes of travel and acknowledge that, in the absence of demand management, a certain level of car congestion is inevitable.”

DMURS goes on to state that:

“The creation of more compact junctions that minimise pedestrian and cyclist waiting times, will place additional pressures on junction performance. In areas where pedestrian activity is high (such as in Neighbourhoods and Centres) junctions may have to operate at saturation levels for short periods (i.e. above 93% during peak periods).

When considering the above, it is obvious that DMURS acknowledges that car congestion is inevitable on some junctions during peak periods, particularly where pedestrian and cyclist movements are favoured through a junction.

In this respect, the consented Signals scheme for Junction 4 would operate over 93% capacity in 2025 in Scenario B and for all scenarios in 2030.

If 100% is considered as maximum preferred capacity during the peak periods, the consented junction would reach this threshold for Scenario E in 2025 and Scenario D in 2030. This is on the basis that the FLR is not completed by those assessment years.

Therefore, it is suggested that the proposed improved junction arrangement with flared approaches be implemented prior to occupation of 60% of the Dean Swift development should the FLR not already be completed by others.

The proposed signal junction improvements would provide extra capacity through the junction to allow the completion and full occupation of the Dean Swift development.

It is considered that suitable phased improvements can be provided to the consented junction between Clonard Road and Boulevard Road in the event that the Flemington Link Road is not completed prior to completion of the Dean Swift development.

In Scenario F, RFCs of 95% to 97% are considered acceptable as these will be short term until the Flemington Link Road connection to the R122 Clonard Road is delivered.

12.7.2.6 Junction 5 – Clonard Road / Castlemill Link Road

Table 12.22 provides a summary of the LINSIG assessment of the existing signalised junction of Clonard Road/Castlemill Link Road based on a 90-second cycle time.

This table demonstrates that the signalised junction will continue to operate within capacity for all scenarios assessed with the exception of Scenario 4 in the AM peak. During this scenario, Castlemill Link would operate at 94.1% of capacity.

	AM			PM		
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
	2025 + Com Dev					
Castlemill Link Road	8.2	43.3	74.8	3.4	43.4	52.5
Clonard Rd East	10.0	41.0	72.4	4.9	31.1	53.5
Retail Park Access	2.7	40.8	55.0	3.9	38.4	43.8
Clonard Rd West	6.5	23.6	56.7	7.1	16.2	53.1

	2040 + Com Dev					
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
Castlemill Link Road	10.3	49.8	84.1	4.0	44.8	59.4
Clonard Rd East	12.4	47.0	81.9	5.7	32.5	59.6
Retail Park Access	3.0	41.3	61.6	4.4	38.3	46.7
Clonard Rd West	7.6	25.0	64.1	8.3	17.1	59.6
	2025 + Com Dev + Dean Swift					
Castlemill Link Road	10.4	50.4	84.6	4.1	45.0	61.5
Clonard Rd East	12.6	47.9	82.8	7.1	30.8	58.4
Retail Park Access	2.9	41.0	58.9	4.1	40.7	49.2
Clonard Rd West	11.6	35.9	82.7	9.6	19.1	66.1
	2040 + Com Dev + Dean Swift					
Castlemill Link Road	15.0	70.1	94.2	4.8	46.7	68.8
Clonard Rd East	16.8	63.7	92.2	7.9	31.8	64.5
Retail Park Access	3.3	41.6	65.5	4.7	41.8	55.1
Clonard Rd West	14.4	44.6	90.0	11.1	20.5	72.7

Table 12.22 LINSIG Results for the Existing Clonard Road/Castlemill Link Road Junction

To address Scenario 4 capacity concern, if the signal timings are changed to a 120 second cycle, the junction would operate within capacity for Scenario 4 as shown in Table 12.23:

	AM			PM		
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
	2025 + Com Dev					
Castlemill Link Road	12.9	49.6	77.0	6.1	59.0	68.0
Clonard Rd East	15.7	45.9	76.6	9.0	34.2	62.6
Retail Park Access	4.5	60.2	77.6	6.3	55.8	65.4
Clonard Rd West	13.8	31.9	75.7	11.9	18.3	68.7

Table 12.23 LINSIG Results for the Clonard Road/Castlemill Link Road Junction with Amended 120 Second Cycle Time

The LINSIG output data for Junction 5 is contained in Appendix O of the TTAR (191004-TTA01 in Appendix 12.1 of this EIAR).

12.7.2.5 Junction 6 – Clonard Road/Millfield Shopping Centre Roundabout

Table 12.24 provides a summary of the ARCADY assessment of the Clonard Road/Millfield Shopping Centre Roundabout.

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2025 + Com Dev								
Clonard Road (East)	1.2	6.57	0.54	A	0.8	5.46	0.44	A
Tesco Access	0.3	5.56	0.22	A	0.8	6.53	0.43	A
Clonard Road (West)	0.8	5.84	0.44	A	0.8	6.55	0.45	A
Westbrook Park	0.1	5.62	0.13	A	0.1	5.81	0.07	A
2040 + Com Dev								
Clonard Road (East)	1.5	7.55	0.6	A	1	6.01	0.49	A
Tesco Access	0.4	6.05	0.26	A	1	7.42	0.49	A
Clonard Road (West)	1	6.5	0.49	A	1.1	7.53	0.52	A
Westbrook Park	0.2	6.01	0.15	A	0.1	6.22	0.08	A
2025 + Com Dev + Dean Swift								
Clonard Road (East)	1.3	6.8	0.56	A	0.9	5.7	0.46	A
Tesco Access	0.3	5.63	0.23	A	0.8	6.94	0.45	A
Clonard Road (West)	1	6.46	0.49	A	1	7.1	0.5	A
Westbrook Park	0.2	5.89	0.13	A	0.1	5.98	0.07	A
2040 + Com Dev + Dean Swift								
Clonard Road (East)	1.6	7.85	0.62	A	1.1	6.33	0.51	A
Tesco Access	0.4	6.16	0.26	A	1.1	8	0.52	A
Clonard Road (West)	1.2	7.22	0.54	A	1.3	8.24	0.56	A
Westbrook Park	0.2	6.3	0.16	A	0.1	6.45	0.08	A

Table 12.24 ARCADY Results for the Clonard Road/Millfield Shopping Centre Roundabout

Table 12.24 shows that the roundabout will continue to operate within capacity with negligible levels of queuing and delays in 2025 and 2040 with and without the proposed development.

The ARCADY output data for Junction 6 is contained in Appendix P of the TTAR (191004-TTA01 in **Appendix 12.1** of this EIAR).

12.7.2.6 Junction 8 – Naul Road/L1390 Roundabout

Table 12.25 provides a summary of the ARCADY assessment of the existing Naul Road/L1390 Roundabout.

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
2025 Base + Com Dev								
Naul Road (North)	1.1	3.45	0.53	A	0.4	2.22	0.3	A
L1390	0.3	2.66	0.2	A	0.3	2.41	0.24	A

Naul Road (South)	0.7	2.69	0.39	A	1	3.2	0.49	A
2040 Base + Com Dev								
Naul Road (North)	1.5	4.05	0.59	A	0.5	2.35	0.34	A
L1390	0.3	2.92	0.23	A	0.4	2.59	0.27	A
Naul Road (South)	0.8	2.95	0.43	A	1.2	3.63	0.55	A
2025 Base + Com Dev + Dean Swift								
Naul Road (North)	1.5	4.07	0.6	A	0.5	2.3	0.34	A
L1390	0.3	2.85	0.22	A	0.4	2.51	0.25	A
Naul Road (South)	0.7	2.78	0.4	A	1.3	3.64	0.55	A
2040 Base + Com Dev + Dean Swift								
Naul Road (North)	2	4.9	0.66	A	0.6	2.46	0.37	A
L1390	0.4	3.13	0.25	A	0.4	2.69	0.29	A
Naul Road (South)	0.9	3.05	0.45	A	1.6	4.22	0.61	A

Table 12.25 ARCADY Results for the Existing Naul Road /L1390 Roundabout

The results demonstrate that the junction would operate within capacity for all scenarios. The ARCADY output data for Junction 8 is contained in Appendix Q of the TTAR 191004-TTA01.

12.7.2.7 Junction 12 – Drogheda Road / Harry Reynolds Road (LINSIG)

Table 12.26 provides a summary of the LINSIG assessment of the existing signalised junction of Clonard Road/Castlemill Link Road.

This table demonstrates that the signalised junction will continue to operate within capacity for all scenarios assessed.

	AM			PM		
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
2025 + Com Dev						
Drogheda Road (North)	9.4	20.8	59.0	5.5	22.7	41.9
Drogheda Road (South)	5.8	17.1	36.3	10.7	24.5	59.4
Harry Reynolds Road	5.9	41.6	57.6	6.9	36.4	57.9
2040 + Com Dev						
Drogheda Road (North)	9.6	21.8	60.2	5.5	22.9	41.9
Drogheda Road (South)	6.1	17.9	37.8	11.2	25.0	61.6
Harry Reynolds Road	6.4	41.1	59.5	7.3	37.0	60.0
2025 + Com Dev + Dean Swift						
Drogheda Road (North)	11.3	22.4	65.4	6.4	24.0	46.8
Drogheda Road (South)	6.7	17.6	40.2	12.6	26.3	66.4
Harry Reynolds Road	6.7	44.0	64.0	8.1	38.7	64.8
2040 + Com Dev + Dean Swift						
Drogheda Road (North)	11.7	23.5	68.8	6.4	24.2	46.8
Drogheda Road (South)	6.9	18.5	41.9	13.2	27.0	68.6

Harry Reynolds Road	7.3	43.5	65.9	8.4	39.5	61.0
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Table 12.26 LINSIG Results for the Drogheda Road / Harry Reynolds Road Junction

The LINSIG output data for Junction 12 is contained in Appendix R of the 191004-TTA01.

12.7.2.8 Junction 13 – Chapel Street / Harry Reynolds Road (LINSIG)

Table 12.27 provides a summary of the LINSIG assessment of the existing signalised junction of Chapel Street and HRR based on a 90 second cycle time.

	AM			PM		
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
2025 + Com Dev						
Harry Reynolds Road (N)	21.0	107.4	100.0	4.4	61.3	75.3
Chapel Street (East)	11.7	162.2	99.4	14.9	261.3	107.5
Harry Reynolds Road (S)	11.0	163.6	99.0	19.6	161.2	102.3
Chapel Street (West)	23.4	178.2	104.4	36.3	230.8	109.0
2040 + Com Dev						
Harry Reynolds Road (N)	46.7	248.8	111.2	4.8	63.7	80.6
Chapel Street (East)	14.0	194.9	102.8	20.7	354.1	115.3
Harry Reynolds Road (S)	15.5	236.7	105.9	32.4	277.0	111.4
Chapel Street (West)	25.4	173.1	104.4	44.3	273.2	112.2
2025 + Com Dev + Dean Swift						
Harry Reynolds Road (N)	53.4	258.4	112.0	5.7	71.3	84.8
Chapel Street (East)	20.4	283.0	110.4	24.0	403.7	119.3
Harry Reynolds Road (S)	18.6	281.1	109.6	36.4	309.5	113.9
Chapel Street (West)	41.9	310.7	114.5	62.6	384.1	120.6
2040 + Com Dev + Dean Swift						
Harry Reynolds Road (N)	69.6	325.0	117.0	6.4	76.6	90.6
Chapel Street (East)	23.6	324.6	113.8	30.8	494.2	127.1
Harry Reynolds Road (S)	25.1	372.8	117.0	51.6	425.0	123.0
Chapel Street (West)	57.4	397.9	121.4	71.9	425.5	124.0

Table 12.27 LINSIG Results for the Existing Chapel Street / Harry Reynolds Road Junction

The results in Table 12.27 show that the existing Chapel Street / Harry Reynolds Road signalised junction would operate over capacity for all assessment scenarios in the morning and evening peak hours.

The current phasing of the junction has each approach having its own green phase as shown in the phasing diagram in Figure 12.30 below:

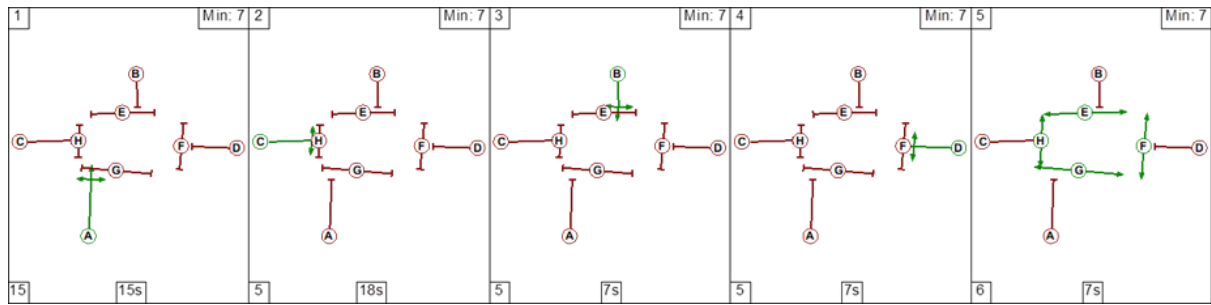


Figure 12.30 Existing Junction 13 Phasing Diagram

However, capacity can be greatly increased at the junction by changing the phasing so that HRR north and south run concurrently. As there a few HRR (south) to Chapel Street (east) movements, this will operate as ‘opposed turners’. An Indicative Right Turn Arrow will be provided for HRR (north) to Chapel Street (west). The provision of a Filter Arrow for Chapel Street (west) to HRR (north) would also improve the efficiency of the signals. The proposed Phasing Diagram is shown in Figure 12.31:

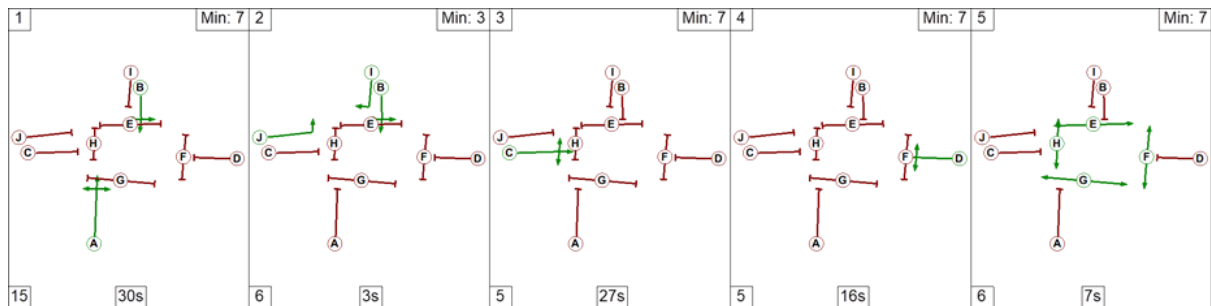


Figure 12.31 Proposed Junction 13 Phasing Diagram

The capacity of the junction can also be improved by changing the cycle time from 90 seconds to 120 seconds. The proposed change in phasing and cycle time can be achieved without altering the physical geometry of the junction, although a new signal controller and signal heads would be required along with changes to the existing road markings.

The results of the revised LINSIG for Scenario 4 are summarised in Table 12.28 below and demonstrate that the proposed changes to the junction would mean that it would operate within capacity in 2040 with the proposed development.

	AM			PM		
	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %	Queue (PCU)	Delay (s/PCU)	Deg of Sat (DoS) %
2040 + Com Dev + Dean Swift						
Harry Reynolds Road (N)	16.5	57.4	86.7	5.1	50.4	62.3
Chapel Street (East)	9.8	87.7	84.3	8.4	82.2	79.8
Harry Reynolds Road (S)	7.8	62.5	66.8	15.1	65.4	84.6
Chapel Street (West)	14.9	58.2	84.7	11.9	53.5	82.7

Table 12.28 LINSIG Results for the Proposed Chapel Street / Harry Reynolds Road Junction with Amended Phasing and 120 Second Cycle Time

The LINSIG output data for Junction 13 is contained in Appendix S of the TTAR (191004-TTA01).

Table 12.28 LINSIG Results for the Proposed Chapel Street / Harry Reynolds Road Junction with Amended Phasing and 120 Second Cycle Time

12.7.3 Do-Nothing Scenario

Should the Masterplan not proceed, the adjacent road network would remain in its current state with no change. There would be an annual increase in background traffic flows related to general growth factors and the committed development.

The junction assessments, discussed in 12.7.2, conclude that the majority of the existing road network and nearby junctions would continue to operate in a satisfactory manner. However, Junction 4 (Clonard Road / Boulevard Road) and Junction 13 (Chapel Street / Harry Reynolds Road) would operate over capacity in 2025 and 2040 with Committed Development. These two junctions would need some form of improvement regardless of the Dean Swift development being implemented.

Given the site location and zoning and acknowledging the scale and type of development that is taking place nearby, it is reasonable to assume that a similar development, with an equally intensive trip generation rate, would be established on the site at some stage in the future.

12.8 Assessment Summary and Residual Environmental Effects

12.8.1 Assessment Summary

This Environmental Impact Assessment Report chapter has been prepared by MPA Consulting Engineers. This chapter has:

- detailed the assessment methodology;
- evaluated the baseline conditions for traffic, junction capacity and accidents;
- assessed the impact and significance of increased traffic flow due to the proposed development; and
- identified suitable mitigation measures.

This chapter has demonstrated that existing baseline conditions, namely traffic flows and accidents, are broadly typical for such a location. There are no link capacity issues and any delays are primarily associated with the operation of the junctions. Junction assessments identified that all junctions, apart from Junction 1 (Clonard Road / Boulevard Road) and Junction 2 (Chapel Street / Harry Reynolds Road); operate with sufficient capacity in 2025 and 2040 without the proposed development.

Accident frequency is also typical and mainly associated with the various junctions.

Overall, the proposed development would have minor adverse impacts in terms of driver delay, pedestrian delay, accidents/road safety and severance.

Where required, proposed junction improvements have been identified, which will have a moderate beneficial impact for driver delay and safety. The development will be accompanied by a Construction Traffic Management Plan and Mobility Management Plan. The former seeks to limit the impact of construction phase of the development. The latter includes measures to encourage more sustainable modes of transport and less single occupancy vehicle use.

12.8.2 Residual Environmental Effects

The transport impact of the proposed development has been undertaken based the full occupancy of the development and maximum traffic generation. As the traffic generation will not differ from that of full occupation, the residual effects will remain unaffected. This includes driver delay, pedestrian/cyclist

delay and accidents. Nevertheless, the proposed junction improvements for Junctions 1 and 2 would greatly improve traffic movement and flow of these junctions and provide improved facilities for pedestrian and cyclist movements.

Once construction of the development has been completed, there will be no need for large construction vehicles (lorries) to visit the site. This would result in a similar proportion of heavy vehicles on the highway network as existing levels. The residual effects of the construction phase are therefore neutral.

13.0 MATERIAL ASSETS –UTILITIES

13.1 Introduction

This chapter of the Environmental Impact Assessment Report has been prepared by MPA Consulting Engineers, and it assesses the potential impacts of the proposed Housing Development on Material Assets (Utilities) currently in the area.

The EPA 2022 Guidelines states that an EIAR must source information on the baseline receiving environment. With this information consideration should be given to natural evolution of the baseline/ receiving environment, i.e. changes that would naturally take place regardless of whether the proposed development goes ahead.

This chapter has assessed the impact of the proposed development on material assets including built services, residential and commercial property and development land within the Study Area. A development may affect material assets if it involves any of the following:

- Acquisition of land;
- Demolition of buildings;
- Revaluation of or change in the development potential of adjoining lands/properties; or,
- Changes to existing services / infrastructure.

This assessment also identifies the positive impacts that such a development will have, such as the amenity that the development will provide.

The EIA Directive also requires that Architectural and Archaeological Heritage (Cultural Heritage) is assessed as part of this chapter. In Ireland this area is covered by a specific chapter. In this report the chapter that deals with it is chapter 14.0.

This chapter has been prepared by Jacqueline McHugh CEng, CEnv MCIWEM on behalf of MPA Consulting Engineers. She graduated from the University of Abertay, Dundee 2001 with a Masters in Environmental Management and Urban Drainage, previously having completed a Bachelor of Science Degree in Environmental Technology in 2000 and a Higher National Certificate in Civil Engineering in 1995. Jacqueline has over twenty years of experience in the planning and development consultancy in both the UK and Republic of Ireland. Project experience includes large scale housing developments, motorway schemes, waste disposal sites and power stations.

13.1.1 Study Area – Development Area

The proposed development is an alteration to part of a larger scheme and masterplan that was granted permission in 2007 & 2008 by Fingal County Council (F07A/1249 & F08A/1329).

The proposed site consists of a green-field site, currently in agricultural use, which is zoned for residential development within the Fingal County Council development plan 2023-2029. The current application is for 564 residential units. Planning permission is also sought for landscaping and infrastructural works, commercial units, 3No. creches, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playground, boundary treatments, internal roads and footpaths and all associated site works to facilitate the development. The development will require the demolition of two unoccupied buildings currently in the ownership of Fingal County Council. The buildings are a bungalow and outhouse/shed building. Drawings of the buildings to be demolished are presented in Appendix 13.2 of this report.

The location of the development area, is presented in **Figure 13.1**. For the purposes of the full and thorough assessment of the development this area is further extended by a radius of approximately 2km. This is based upon the Institute of Geologist Ireland (IGI) guidelines.



Figure 13.1 Proposed Development Site

13.2 Research Methodology

13.2.1 Relevant Guidelines/Policy

This chapter has been prepared with reference to the criteria set out in the Guidelines on Information to be Contained in an Environmental Impact Statement (EPA 2002) and the Advice Notes on Current Practice (EPA 2003). This chapter also has regard to the EIA Directive 2014/52/EU and the guidelines published in 2022 by the EPA. .

13.2.2 Definitions of the Term Asset in Context of this Report

Material assets are assessed in this chapter as either economic assets of natural origin or economic assets of human origin.

Economic assets of natural origin such as biodiversity, land & soil and water are addressed elsewhere in this document, i.e., chapters 5, 6 and 7 respectively. As noted in section 13.1 above cultural assets of a physical type and cultural heritage of a social type are addressed in chapter 14.0 of the EIAR document.

Economic assets of human origin are considered in this chapter. A desktop study was carried out on existing material assets of human origin associated with the proposed development site. Anticipated resource use for the construction and operation phase of the development were assessed in conjunction with the impacts. Mitigation measures are proposed where they are applicable.

13.3 Receiving Environment

13.3.1 Site Location and Setting

The assessment of the Receiving Environment considers the character, context, significance and sensitivity of the proposed development and takes account of any other proposed developments that are likely to proceed.

The proposed site is located in North West Balbriggan, Co. Dublin. It is situated between Flemington Lane and the R122 and is approximately 2km west of the coast and 1km east of the M1.

Flemington Lane with detached dwellings lies to the North of the site. To the north east and east of the site are existing residential developments. To the southeast the site is bounded by another residential development known as "Taylors Hill" and a proposed development known as "Ladywell". To the southwest of the site is Bridgefoot Road.

The west of the site is bounded by agricultural land that forms a boundary with Clonard-Bridgefoot Road, L1130 and there are intermittent hedgerows along this road boundary. To the northeast of the proposed development is the Balbriggan Water Supply Scheme Reservoir.

A school named Colaiste Ghlór na Mara is to the Southeast of the site facing onto the Boulevard Road which leads onto the R122 Road and to the Southeast on Bridgefoot Road is a pre-school called Helgas.

The site rises in the East-West direction from 57.5m AOD at the northeast boundary to 41.5m AOD at the northwest boundary at gradients between 1:17 in the south, and 1:24 in the north.

13.3.2 Economic Assets of a Human Origin

This section assesses the key aspects relating to material assets of the proposed development site and the surrounding area such as urban settlements, ownership and access, traffic infrastructure, potable water supply, waste water discharge, electricity supply, gas supply, telecoms and municipal waste.

The following aspects of the proposed development are likely to affect material assets associated with the site and its surrounds;

- Urban settlements;
- Ownership and access;
- Transport infrastructure (refer to transport report submitted in conjunction with this EIAR and chapter 12 of this EIAR)
- Foul Water Disposal
- Potable Water Supply
- Surface Water Disposal (also refer to chapter 7.0)
- Natural Gas Supply;
- Electrical Supply;
- Telecoms infrastructure;
- Municipal Waste;
- Agriculture; and
- Demolition of existing structures

These assets will be described in their current state to provide Receiving Environment/ Baseline information. Each aspect of material assets will then be considered in the context of the proposed development, at both construction phase and operation phase, to outline the potential impacts that the development could have.

Mitigating measures will then be considered, followed by a summary assessment of the predicted impact that the proposed development will have on the material assets in the area assuming that the mitigating measures are applied.

13.3.3 Urban Settlements

The proposed development site is located to the west of Balbriggan urban centre. It is classified in the Sheet 4 of the Balbriggan Development Plan 2017 – 2023 as being land zoned for residential use subject to the provision of the necessary social and physical infrastructure. It is currently in use as agricultural land.

The proposed development is located in the Northwest of Balbriggan in the townland of Clonard or Folkstown Great. It lies to the approximately 1.2km to the east of the M1 motorway. Flemington Lane with detached dwelling lies to the North of the site. To the north east, east and southeast of the site are residential developments. To the south of the site Clonard Road / Naul Road, R122. There is construction also happening in the area at Taylors Hill Phase 2.

The proposed development is mixed residential with landscaping and public open space and will take place in 4 no. (four) phases. The proposed development will integrate fully with the surrounding area and adjacent proposed developments and is considered an appropriate form of development in accordance with the local development plan.

13.3.4 Ownership & Access

All lands associated with the development of housing on the site are currently in the ownership of Dean Swift Property Holdings Limited. A strip of land to the north, which is required to facilitate the Link connection to Flemington Lane, is in the ownership of Fingal County Council and consent has been given for this application. Consent has also been given by Glenveagh Homes for access to connection to drainage systems at Taylors Hill.

The site is currently agricultural fields accessed from Bridgefoot Road, Flemington Lane and Boulevard Road.

The proposed development will be primarily accessed by Flemington Link Road/ Urban Street, this street will have a high-capacity carriageway, footpaths, cycle track and verges. The residential site will be served by the R122 Clonard / Naul Road, the new Balbriggan Boulevard Road, Hamlet Lane and the new Flemington Link Road, which in future will connect the R122 with Boulevard Road, Hamlet Lane and Flemington Lane.

From Boulevard Road traffic will distribute to the wider road network including the M1 to the west. **Figure 13.1** shows the proposed road infrastructure.

There are also plans for pedestrian and cycle access from this development to existing neighbouring and proposed developments.

The Traffic and Transport Assessment prepared by MPA Consulting Engineers which is submitted with this application addresses the impact of the proposed development on the surrounding road network. In addition, Chapter 12 details the impact of the construction and operational traffic associated with the development proposal.

13.3.5 Transport Infrastructure

This application is for 564 No. residential units and is accompanied by a Traffic & Transport Assessment (TTA-01 and TTA-02) prepared by MPA Consulting Engineers and is submitted as an Appendix to Chapter 12 of this EIAR. The impact of the proposed development on transport infrastructure is discussed in greater detail in the Transport chapter of this EIAR, i.e. Chapter 12, therefore only a brief overview is covered in this chapter.

The site has a limited amount of public transport service. The B1 Balbriggan Town Service bus runs to/from the rail station and stops at Hamlet Lane, approximately 200m from the new development.

Balbriggan town is well connected with regular trains to Dublin Connolly station as well as bus services to Dublin, Dublin Airport, Stamullen and Ashbourne. The site is also very well connected for car travel, situated within 1.5km of M1 Motorway, Junction No. 6.

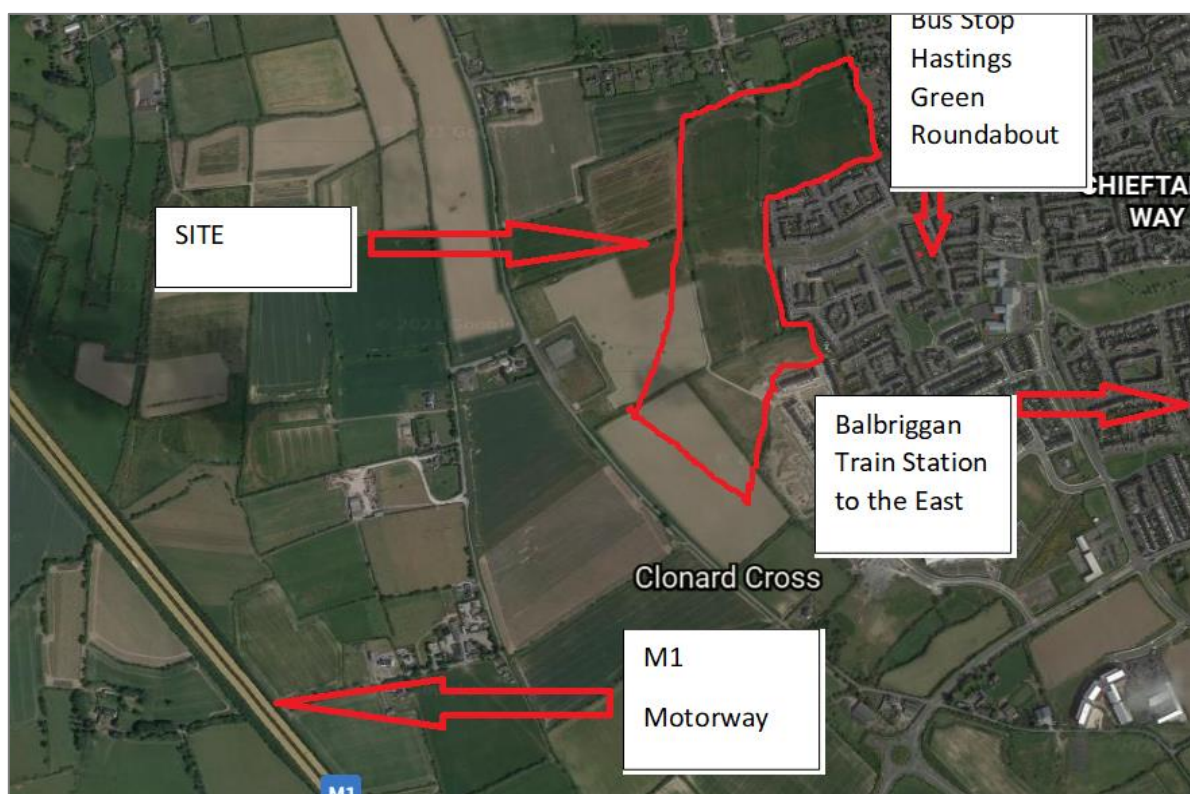


Figure 13.2 Transport Links

The proposed development will take due consideration of the “National Smarter Travel Initiatives”. It will facilitate the construction of part of the distributor road from Flemington Lane towards the R122 roundabout to the south of the site and the competition of the current Boulevard Road.

In addition, it will link to existing neighbouring cycle and pedestrian route ways to Balbriggan Village. A total of 2014 No. bicycle spaces are proposed, this includes 1326 No. resident bicycle spaces, 640 No. visitor spaces and 48 No. spaces allocated to creche bicycle parking. There are 185 No. Electric Vehicle (EV) charging points (162 communal residential and 23 visitor) proposed for the development.

13.3.6 Foul and Surface Water

There is an existing 300mm diameter foul sewer and a 450mm storm sewer running West-East through the site, entering at the junction leading to the open space lands and existing at Hamlet Lane. There are various storm and foul sewers adjacent to the site currently serving the existing housing areas east of the proposed new development.

Figure 13.3 below shows the existing storm and foul mains that run through the site.

There are six proposed connections to the current foul sewerage system for the proposed development. The proposed system is a gravity fed system.

The surface water/storm water management system proposed for the development is a sustainable stormwater management system in accordance with the Greater Dublin Strategic Drainage Study and incorporates many nature-based solutions. It will involve direct infiltration to ground via permeable paving, integrated tree attenuation pits and bio infiltration areas, with a formal piped gravity system discharging to individual attenuation systems which allow for the infiltration of the interception storage volume and will attenuate flows from the development. Features included in the management strategy include swales, Stormtech tanks, rain gardens, infiltration planter areas, permeable paving and SUDS basin with gravel bed. These will allow direct infiltration to ground via permeable paving and filter drains with a formal piped gravity system discharging to multiple attenuation basins which will allow for infiltration of the interception storage volume and will also allow for long term infiltration.

There are 8 (eight) proposed catchment areas (as shown on the Storm Drainage Layout Overall Drawing No. 191004/C/008.0 Rev PL6) serviced by either Sustainable Urban Drainage Systems (SUDs) or by traditional drainage methods. These will discharge via flow control devices such as hydrobrake to the existing storm sewer network a total of 5 connections are proposed.

Interception storage as per Greater Dublin Strategic Drainage Study recommendations will be provided below the attenuation to collect the first 5mm of rainfall, generated from the roads and footpaths for infiltration to ground.

A pre-connection enquiry response from Irish Water dated 24th November 2022 regarding the development Ref: No. CDS22007645 provides a Confirmation of Feasibility (CoF) for the development. This (CoF) states that the following is required:

- In order to accommodate the proposed connection, upgrade works are required to increase the capacity of Quay Street Pumping Station. Irish Water currently has a project underway which will provide the necessary upgrade and capacity. This upgrade project is scheduled to be completed by Q2/2024 (this may be subject to change) and the proposed connection could be completed as soon as possibly practicable after this date.

It also states that the Developer has to demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of existing on-site Irish Water assets during and after the works, this is to be completed at Application Stage. This correspondence is presented in **Appendix 13.1**.

A Statement of Design Acceptance (SODA) dated 29th May 2023 has also been received from Irish Water and this is also presented in **Appendix 13.1**.

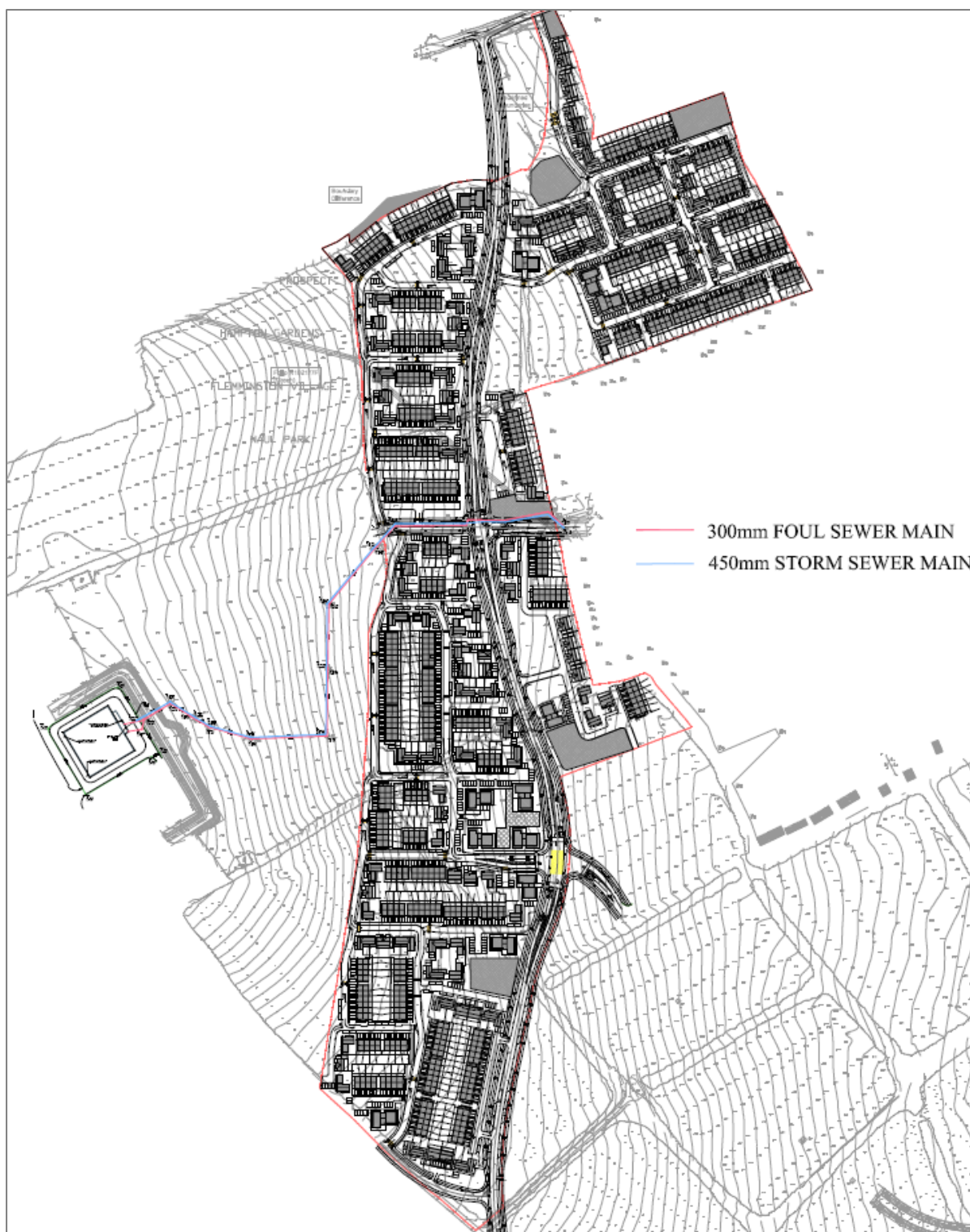


Figure 13.3 Existing Storm and Foul Sewer

13.3.7 Water Supply

There are 2nr. watermains, 400mm and 450mm diameter, running through the site. The pipes start at the reservoir to the West of the site and run West-East through the southern section of the site. The pipes then go separate directions, with the 450mm main and a separate 300mm main running south and exiting the site on the Boulevard road. The 400mm main runs North and exits site at Hamlet Lane.

The current water supply network is presented in Figure 13.4 (Northern section of the site) and Figure 13.5 (Southern section of the site) below. The southwestern section of the site is not depicted but there is no Irish Water infrastructure currently in this area of the site.



Figure 13.4 Existing Irish Water Infrastructure North



Figure 13.5 Existing Irish Water Infrastructure South

Water supply for the proposed site is to have six connections for the proposed development as per the Proposed Watermain Layout -Drawing No. 191004/C/009.0 Rev PL6. Connection one ties into an existing 400mm ductile iron with a 200mm diameter high density polyethylene (HDPE) pipe in the northeast of the site.

Connection two and three are along the Link Road / Street and comprise proposed 150mm diameter medium density polyethylene (MDPE) pipes connecting into existing 400mm diameter ductile iron pipes.

Connection 4 is located on the western site boundary and this comprises the connection of a 200mm diameter HDPE pipe to an existing 400mm diameter ductile iron pipe. This pipe runs directly from the Balbriggan Water Supply Scheme Reservoir to the west of the site.

Connection 5 is located in the south east of the site and is a proposed 200mm diameter MDPE pipe connecting to an existing 300mm diameter ductile iron pipe.

Connection 6 is located in the north of the site and is a proposed 150mm diameter MDPE pipe connecting to an existing 100mm diameter PVC pipe.

A pre-connection enquiry response from Irish Water regarding the development Ref: No. CDS22007645 provides Confirmation of Feasibility (CoF) and states that the following is required.

- Approximately 10m of the existing 150mm MoPVC main (amber line below) in Hamlet Lane to be upgraded to 225mm ID pipe
- The spine main of the new DMA shall be of 200mm ID pipe minimum (green line below) to provide capacity for fire and daily peak. A DMA meter with associated telemetry to be installed at the line.
- The branch mains shall be 150mm ID to accommodate daily peak demand and fire capacity. Connection mains shall be 100mm ID.
- An onsite booster pump to provide pressure to the Development is required
- Bulk meter to be installed on the site development side of each connection main and linked up with telemetry online

This correspondence is presented in **Appendix 13.1**

A Statement of Design Acceptance (SODA) dated 29th May 2023 has also been received from Irish Water and this is also presented in **Appendix 13.1**.

13.3.8 Natural Gas Supply

The existing gas distribution network off site comprises a high pressure supply pipe along the Bridgefoot Road. There is a 180mm diameter medium-pressure (4bar) distribution main at Flemington Lane to the north, and a 250mm diameter medium-pressure (4bar) distribution main at Hamlet Lane to the east.

Gas Networks Ireland (GNI) have confirmed that these pipes have ample capacity to supply the development.

There are also low-pressure (75mBar) distribution mains of various diameters on Hamlet Lane. Suitability of the low-pressure main for supplying the proposed development is under review by GNI. There are no proposed gas connection plans available at the time of writing this report and any details will be subject to agreement with Gas Networks Ireland.

Figure 13.6 presents the current local gas supply network.

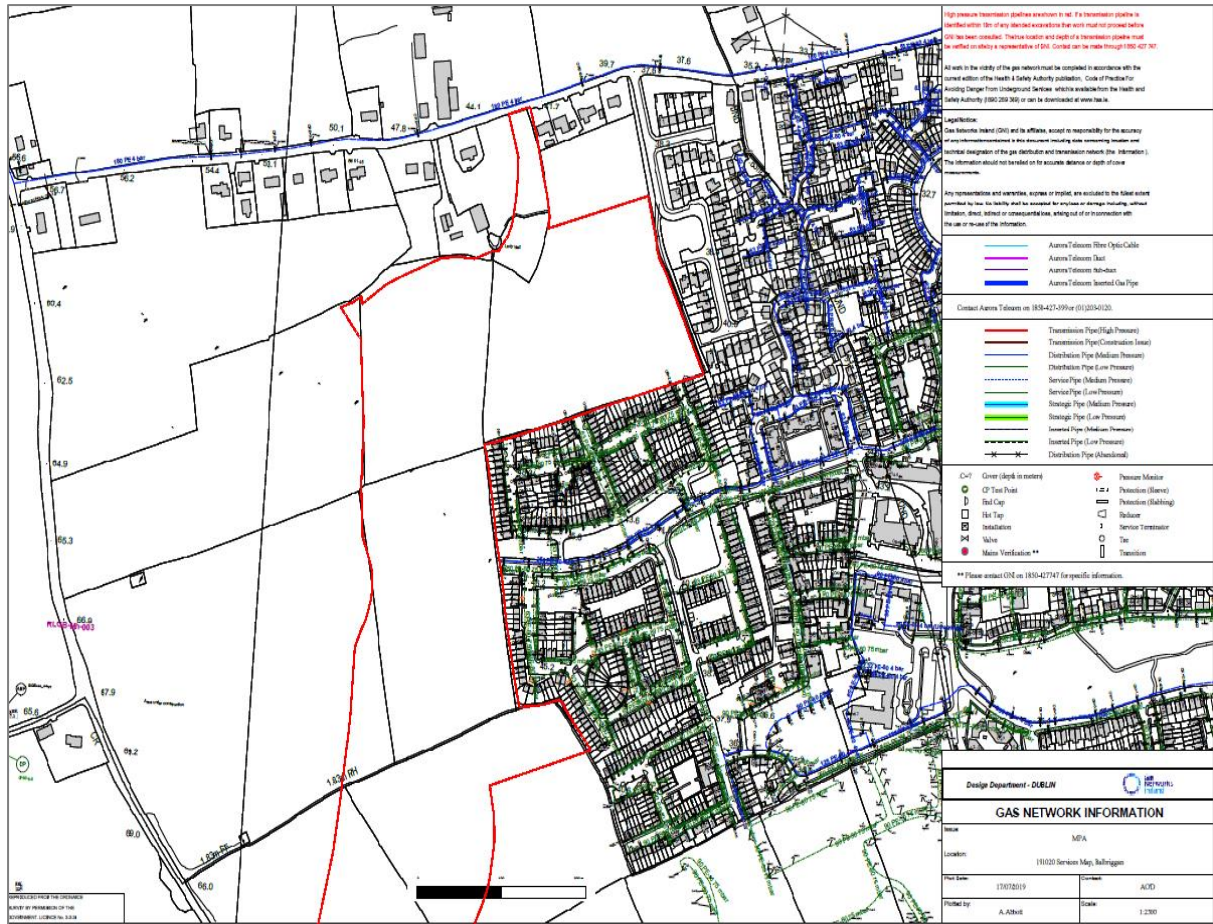


Figure 13.6 Existing Local Gas Network Supply

13.3.9 Electrical Supply

Electricity Supply Board Networks drawings show a number of assets on and adjacent to the site. A 38KV overhead line enters the site from the Northwest and exits at Hamlet Lane. There is a low voltage overhead line on the Northern boundary of the site.

The adjacent housing areas all have medium and low voltage underground cables. The current ESB network supply layout in the local area is presented in Figure 13.7 below. The development has 185No. EV points proposed and 2No. electricity sub stations proposed.

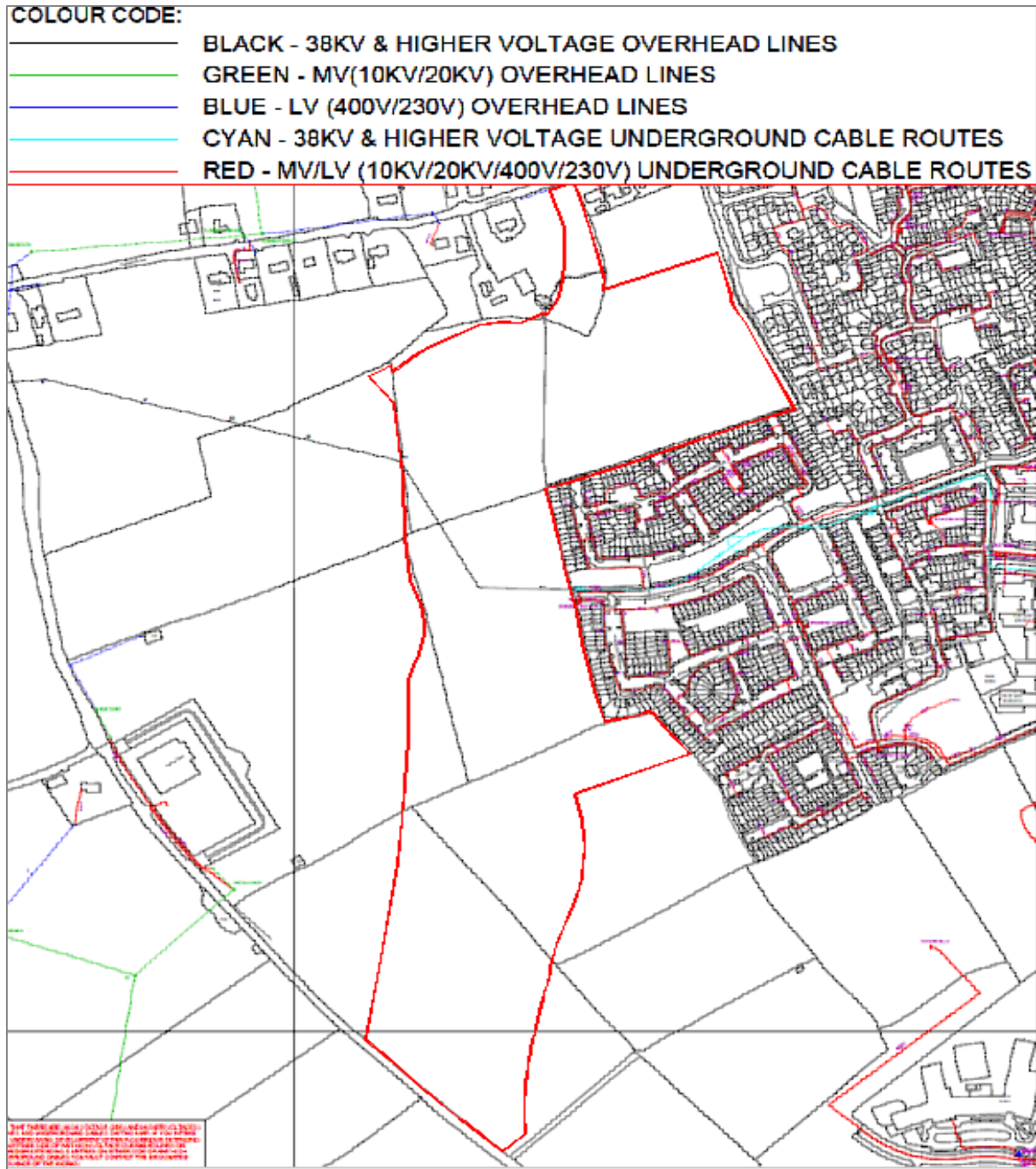


Figure 13.7 Existing Local ESB Network Supply

It is the intention that the proposed residential development be served by Medium Voltage Sub-stations located within the development. The final details will be subject to agreement with the ESB networks.

13.3.10 Information and Communication Technology (ICT)

The proposed residential development will be serviced by ducting/cables and chambers for utilities to cater for the different utility providers. Postal services to the area will be provided by An Post.

Existing Eir Utilities

There are existing Eir service points adjacent to the site associated with the residential ribbon development along Flemington Lane and the largescale residential developments to the east of the site. These are shown in **Figure 13.8** below.

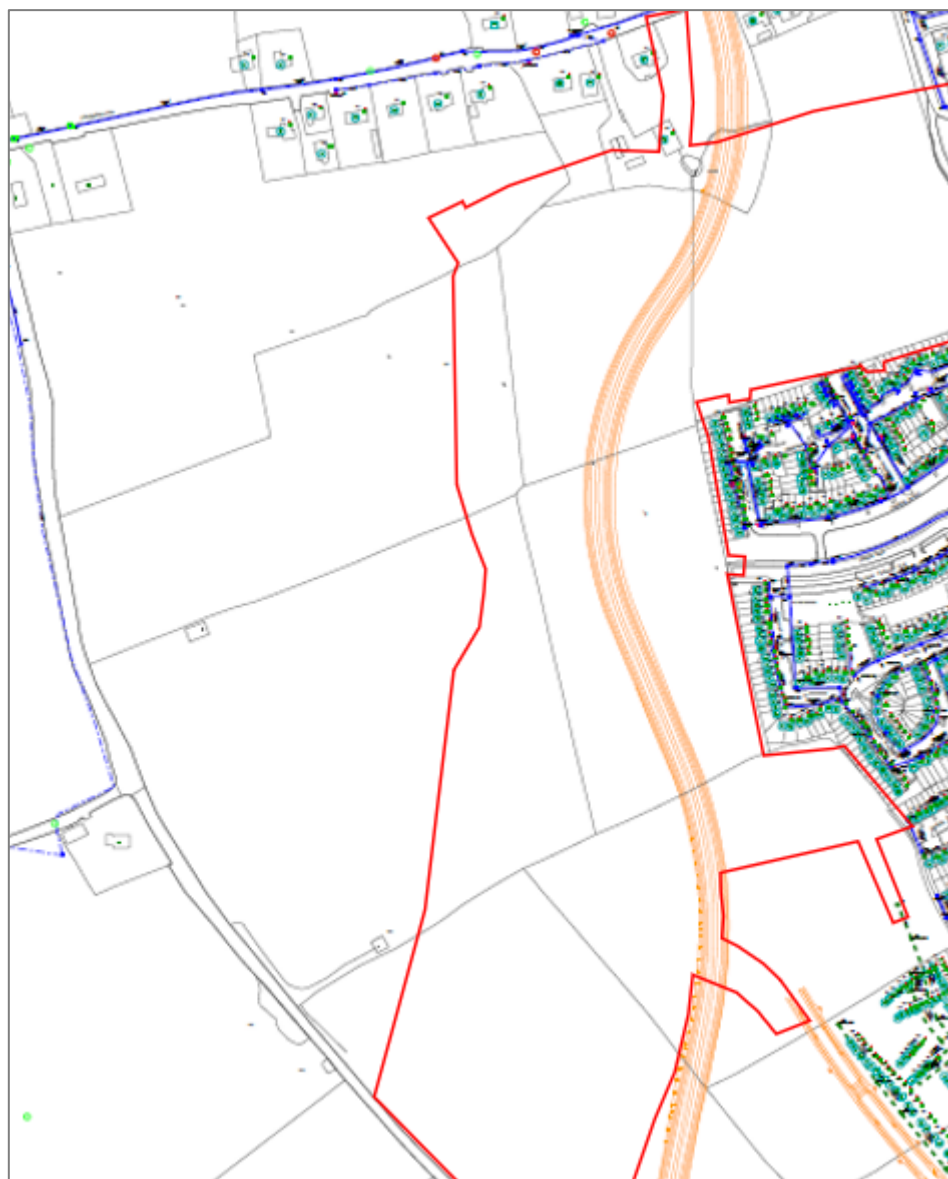


Figure 13.8 Eir Utilities

Existing Virgin Media Utilities

Virgin Media have telecommunication assets serving the housing areas adjacent to Hamlet Lane and Bremore. These are shown in Figure 13.9 below.



Figure 13.9 Virgin Media

13.3.11 Waste

The waste management strategy is based on a dedicated bin/waste storage areas for apartments and with private detached and semi-detached dwellings being serviced by waste management companies.

Domestic Waste in the Fingal County Council area is generally collected by private contractors operating on a permit system managed by the National Waste Collection Permit Office. Recycling facilities managed by Fingal County Council are located at Swords and Blanchardstown.

Waste Management, both during the construction phase and the operational phase, is covered in greater detail in separate documents; Construction & Demolition Waste Management Plan and Operational Waste Management Plan. These will take due consideration of any particular wastes arising on site, e.g. waste derived from creche facilities.

13.3.12 Agriculture

The lands proposed for development are currently in agricultural use. Fingal Development Plan however has shown that the lands have been zoned for residential development since 2005, and possibly earlier. The land is currently used for arable purposes and not livestock. Arable farming is deemed to be less sensitive form of agriculture than livestock farming,

13.3.13 Demolition of Existing Structures

The development will require the demolition of a bungalow and outhouse/shed structure to allow access to the site from Flemington Lane. An asbestos survey will be required prior to demolition. It is likely that the majority of the concrete block, metal sheeting, glass, timber, slate, and concrete materials can be sorted into skips on site for re-use and or recycling off site via a licensed waste management contractor. The buildings will not require any specialist demolition methods as they are basic structures.



Figure 13.10 Bungalow to be demolished

13.4 Characteristics of the Proposed Development

13.4.1 Development Description Summary

Assessment and 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. The potential impact on the material assets is discussed in this chapter.

A full description of the proposed development is provided on Chapter 2.0 of this document. In summary the development proposals are described as follows. The proposed development comprises 564 No. residential units, consisting of 378 No. houses; (127 No. two bedroom houses; 237 No. three-bedroom houses and 14 No. four-bedroom houses), 84 No. duplex units (22 No. one-bedroom duplexes, 36 No. two-bedroom duplexes and 26 No. three-bedroom duplexes) and 102 No. apartments (35 No. one bedroom apartments and 67 No two-bedroom apartments). The main development units are Hampton Park South, Hampton Park Central, Tanne's Lane, Hampton Park North, Flemington Park. In addition to residential units there is are 3No. proposed childcare facilities and 9No. commercial units.

The development proposes the introduction of a primary vehicular/pedestrian entrance from the southeast (upgrade of existing access from Boulevard Road), the construction of a secondary access route from the east (access from Hamlet Lane) and the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Gardens).

A total of 927 No. car parking spaces are proposed, this includes 811 No. residential parking spaces, 89 No. visitor spaces (including 23 No. EV points), 11 No. accessible visitor parking spaces, 7 No. spaces allocated to creche parking and 9 No. set down spaces.

A total of 2014 No. bicycle spaces are proposed, this includes 1326 No. resident bicycle spaces, 640 No. visitor spaces and 48 No. spaces allocated to creche bicycle parking.

Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 No. ESB substations, open space areas including playground, boundary treatments, internal roads and footpaths and all associated site works to facilitate the development. Demolition of two existing unoccupied buildings is also included.

13.5 Potential Impact of The Proposed Development

13.5.1 Introduction

This section provides a description of the specific direct and indirect impacts that the proposed development may have during the construction and operational phases of the development.

This is provided with reference to both the characteristics of the receiving/baseline Environment and characteristics of the proposed development sections while also referring to the;

- Magnitude and intensity;
- Integrity;
- Duration; and
- Probability of impacts.

The assessment considers direct, indirect, secondary, cumulative, short, medium and long term/permanent, temporary, positive and negative effects including interactions.

13.5.2 Urban Settlements

Construction Phase

The construction phase of the proposed development is likely to have some temporary impacts on the existing urban settlement in the vicinity of the site. This would be due to the disturbance of the construction phase and some additional minor and temporary increases to the local population which may arise out of the construction activity.

These localised impacts are addressed in the relevant chapter 4 of this EIAR document.

Operational Phase

The proposed development will result in the provision of 564 No. residential units along with open space, creches, retail/commercial units and recreational areas. This is considered a permanent positive impact in keeping with Fingal County Council's Development Plan.

13.5.3 Ownership and Access

Construction Phase

The subject lands are currently undeveloped agricultural lands. There will be some temporary disturbance during construction to the surrounding area. This will be minimised through appropriate mitigation measures as outlined in the Construction Management Plan as agreed with the Local Planning Authority. This report is a stand-alone document submitted with this EIAR.

The details of the deliveries and access for construction activities will be agreed with the Local Planning Authority prior to site mobilisation. Traffic management plans will also be submitted for approval and road opening licenses applied for where applicable. Any alterations to the local road network are likely to have a short-term negative impact.

Operational Phase

The proposed development will provide for efficient access to the R122 and onto the M1 motorway. The traffic and transport impact of the proposed development is assessed comprehensively within the Traffic and Transportation Assessment Report by MPA Consulting which is submitted as a stand alone document with this EIAR document in Chapter 12. These impacts are likely to be permanent and neutral.

13.5.4 Transport Infrastructure

Construction Phase

The increased volume of construction traffic has the potential to impact negatively on the local road network and increase the likelihood of dust, soil and other construction materials being deposited on it. If allowed to happen this can cause hazards/nuisance to both traffic and pedestrians.

The potential impact of the proposed development on the transportation infrastructure is likely to be short term and low. The Traffic and Transportation Assessment and Chapter 12 of this EIAR along with the Construction Traffic Management Plan (CTMP) address the likely construction phase traffic impacts and recommend mitigation measures to address these.

Operational Phase

The operational phase of the proposed development will result in increased volumes of traffic using the local road network. The impact that the proposed development would have on the transportation infrastructure in the vicinity of the proposed development has been fully assessed in the Traffic & Transport Assessments (TTA-01 & TTA-02) and demonstrated to not have any adverse impacts on the local road network.

It concludes that with the phased development of the site and the associated new road infrastructure and connections, the existing and proposed network has sufficient capacity for the development proposed with some mitigation and upgrades works required on the existing network. This impact is considered permanent and neutral.

It should be noted that the traffic impact of the proposed development was utilised to inform air quality and climate, noise and vibration sections of this EIAR. These are addressed in chapters 9 and 8 respectively.

13.5.5 Foul Water Disposal

Construction Phase

The development will provide new connections to the existing off site foul sewer network. There is potential for some short term impacts due to these works however the potential impact from the

construction phase of the proposed development on the local foul water network is likely to be neutral. Construction phase sewerage will be tankered off site for disposal at a licensed waste management facility.

Operational Phase

During the operational phase there will be an increase in the foul discharge from the proposed development, therefore reducing the capacity of the public foul sewer. Correspondence with Irish Water suggests that a connection to the public foul sewers for the development is feasible subject their stipulations with regards the development. These stipulations are presented in Appendix 13.1 and the Engineers Services Report provides more elaborate detail on the design solutions adopted.

13.5.6 Surface Water

Construction Phase

The proposal will involve providing new connections to the existing off site surface water network. There is potential for some short-term impacts due to these works. The environmental construction management will address these concerns. It is likely that the potential impact from the construction phase of the proposed development on the local surface water network will be neutral.

Operational Phase

The impact of surface water drainage is addressed in the Engineering Services Report prepared by MPA Consulting Engineers.

Long-term maintenance of the full surface water drainage system is essential to ensure that runoff is not contaminated. Poor maintenance of the storm water drainage system over a long period of time will likely result in a long-term albeit imperceptible negative effect to the water quality of Clonard Brook. It is therefore imperative that an agreed, maintenance and monitoring schedule is agreed prior to construction taking place.

Interception storage as per Greater Dublin Strategic Drainage Study recommendations will be provided below the attenuation to collect the first 5mm of rainfall, generated from the roads and footpaths for infiltration to ground. SUDs will help to manage peak flows to the engineered system. Recommendations from the Flood Risk Assessment will be implemented. This is considered to be a long-term moderate impact.

13.5.7 Water Supply

Construction Phase

The proposal will require new connections to the existing potable water supply network. Irish Water have stipulated their requirements that the Developer must meet in order to meet their development specific connection criteria as per Appendix 13.1 of this chapter.

All connections will be carried out in accordance with best practice. Irish Water require an on- site assessment of the existing network to determine potential flow under normal conditions. No assessment of fire flow requirements has been undertaken at this time.

There is potential for some short-term impacts by way of disturbance to the water supply due to these works, however it is likely that the potential impact from the construction phase of the proposed development on the local water network will be neutral.

Operational Phase

The potential impact from the operational phase on the water infrastructure is likely to be long term and moderate. Modern pipe systems are likely to be more effective at water distribution than existing infrastructure ensuring good water quality and efficient water distribution.

13.5.8 Natural Gas Supply

Construction Phase

The supply of natural gas to the proposed development site will not be operational during the construction phase. The potential impact from the construction phase on the local gas supply is likely to be neutral.

Operational Phase

The development will be connected to the Gas Networks Ireland gas supply network. The impact of the operational phase of the proposed development on the gas supply network is likely to increase the demand on the existing supply. The potential impact from the operational phase on the gas supply network is likely to be long term and moderate.

13.5.9 Electrical Supply

Construction Phase

Construction related activities will require temporary connection to the local electrical supply network. The potential impact from the construction phase of the proposed development on the local electrical supply is likely to be short term and low.

Operational Phase

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 network.

The potential impact from the operational phase on the electricity supply network is likely to be long term and moderate.

13.5.10 Information and Communication Technology (ICT)

Eir Utilities

Construction Phase

Fixed Eir telecoms will not be operational during the construction phase. The construction phase is likely to give rise to the requirement to divert existing telecom lines and use mobile signal antennas in the local area.

If line diversion is not undertaken in accordance with best practice this has the potential to impact on local telecoms connectivity. It is unlikely that the mobile network will be impacted by the construction phase. The potential impact from the construction phase of the proposed development on the local telecoms network is likely to be short term and low.

Operational Phase

The impact of the operational phase of the proposed development on the telecoms network is likely to be an increase in demand. The potential impact from the operational phase of the development is likely to be long term and low.

Virgin Media Utilities

Construction Phase

Fixed Virgin telecoms will not be operational during the construction phase and the demand for other Virgin media services is likely to be negligible during the construction phase. The construction phase is likely to give rise to the requirement to divert existing telecom lines. If not undertaken in accordance with best practice this has the potential to impact on local telecoms connectivity. The potential impact from the construction phase of the proposed development on the local telecoms network is likely to be short term and low.

Operational Phase

The impact of the operational phase of the proposed development on the Virgin telecoms network and other media services is likely to be an increase in demand. The potential impact from the operational phase of the development is likely to be long term and low.

13.5.11 Municipal Waste

Construction Phase

The construction phase of the proposed development will result in the production of construction materials waste, construction office waste and excavation/overburden removal wastes. This has the potential to impact on the local municipal waste network. The potential impact from the construction phase on municipal waste disposal is likely to be short term and moderate. Please refer to the Construction and Demolition Waste Plan for further details.

Operational Phase

The impact of the operational phase of the proposed development on the municipal waste disposal will result in an increase in demand. There will be an Operational Waste Management Plan implemented during the operational phase. The potential impact from the operational phase on the municipal waste disposal is likely to be long term and moderate.

13.5.12 Agriculture

Construction phase

The lands proposed for the development are currently in agricultural use but have been re-zoned as residential lands in the Fingal Development Plan 2017-2023. The proposed development lands are not used for livestock and neither are the immediate surrounding agricultural lands. Arable farming is considered as a less sensitive type of farming, i.e. less sensitive to impacts e.g. noise of construction affecting horses.

Agricultural use of the land will cease when construction begins. As the lands have been zoned for residential development since, at the latest, 2005 and adjacent land has been developed it is not considered that the development will have a negative impact on agriculture in the area in general.

Operational Phase

The main impact of the development on agriculture will be the loss of lands. This will be moderate and permanent. Since the development is in keeping with the overall development plan for the area and it alters the environment in a manner that is consistent with emerging trends and therefore is not considered to have an undue negative impact.

13.5.13 Demolition of Buildings

Construction phase

The proposed development requires the demolition of an un-used outbuilding and an un-occupied bungalow under the current development plans. This is assessed as positive as they are currently unoccupied and derelict and are visually negatively impacting upon their surroundings.

Operational Phase

There will no requirement for demolition of buildings during the operational phase subject to current building regulations being adhered to.

13.5.14 Cumulative Potential Impacts

The cumulative effects of the proposed development on material assets have been assessed taking into consideration other planned, existing and permitted developments in the surrounding area into account. Adjacent developments include Taylors Hill 2No. phases of which have been completed to date and phases are yet to be completed. In addition, developments including Ladywell, which has been granted planning (F21A/0055) have been considered. Other developments are proposed for the area as well as but are not at the planning application stage as yet.

With all these in mind it is predicted that that proposed development will contribute to the overall urban structure of Balbriggan and the Greater Dublin area in terms of provision of much needed housing development.

It will have positive cumulative effects on urban settlements, transports infrastructure and access by allowing movements to the R122 and M1 and providing access to public open spaces and cycle/pedestrian routes.

13.5.15 Do Nothing Impact

In order to provide a qualitative and equitable assessment of the proposed development, this section considers development in the context of the likely impacts upon the receiving environment should the proposed development not take place.

If the proposed development does not take place then there would be no additional demand or loading on material assets of natural or human origin.

13.6 Mitigation and Remedial Measures

13.6.1 Definition and Policy Background

Remedial, mitigation and avoidance measures describe any corrective or mitigation measures that are either practicable or reasonable, having regard to potential impacts. This includes avoidance, reduction and remedy measures as set out in section 4.7 of the Development Management Guidelines 2007 to reduce or eliminate any significant adverse impacts identified. It should be noted that a number of mitigation measures proposed in other chapters within this EIAR are also of relevance to material assets but will not be repeated here.

The EPA 2022 Guidelines list four established strategies for mitigation of effects;

Avoidance

Usually referring to strategic issues such the selection of alternative location or processes in order to avoid certain effects.

Prevention

Prevention usually refers to technical measures, such as putting in place measures to prevent an effect (e.g. noise) from reaching unacceptable levels.

Reduction

Reduction is a common strategy for dealing with effects that cannot be avoided, e.g. emissions. This can include measures to reduce the effect, or to reduce exposure to the effect.

Remedy/Offsetting

Remedy or offsetting is commonly used to deal with effects which cannot be prevented or reduced. An example would be replanting of trees to replace trees whose cutting was unavoidable.

13.6.2 Construction Phase Mitigation Measures

The following mitigation measures are proposed for the construction phase of the proposed development with reference to Material Assets;

- The proposed development should comply with the procedures set out in the Construction and Operational Waste Management Plan with respect to construction waste;
- A Construction Environmental Management Plan (CEMP), including traffic management, should be produced and executed by the contractor for the construction phase. The purpose of this is to protect local amenities and maintain the integrity and operation of the local road network during the construction phase;
- A Construction Traffic Management Plan (CTMP) subject to approval by the Local Authority will be produced and adhered to. The CTMP will provide details of intended construction practice for the development, including – (a) Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse, (b) Location of areas for construction site offices and staff facilities, (c) Details of site security fencing and hoardings. (d) Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site, (e) Measures to obviate queuing of construction traffic on the adjoining road network (f) Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network (g) Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works. The CTMP will be agreed with both Fingal County Council and An Garda Síochána, prior to commencement of works;
- The Construction Environmental Management Plan details appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels. (a) Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater. (b) Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil. (c) Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.
- It has been found from the Flood Risk Assessment that the site is not subject to pluvial, fluvial or tidal flooding and is a Zone C site. As good practice however surface water drainage will require maintenance and upkeep to prevent pluvial flooding that may occur as a result of negligence/poor maintenance of the stormwater management system.
- An operation and maintenance manual for all surface water/foul should be provided by the contractor upon completion of the construction phase. This should detail all operational and

maintenance aspects of the surface water drainage systems and is to be agreed with Fingal County Council prior to its implementation. This includes inspecting and maintaining the petrol interceptors, Hydrobrakes, attenuation devices, etc.

- Connection to the foul sewer will be gradual over-time due to phased nature of the works. Capacity of Irish Water's downstream network to accept the loading from the development must be assessed on an ongoing basis through-out the construction of the development. Irish Water have agreed to undertake this assessment. Connections will be agreed with Irish Water prior to connecting to the foul sewer network;
- The location of all implemented services should be provided to the utility providers to update their records and allow accurate locating and understanding of the services for any future upgrades; and
- Provision of utilities should be carried out in accordance with the recommendations of the relevant utility providers (ESB, Gas Networks Ireland, Virgin Media, Irish Water/Fingal County Council etc).
- Demolition will be carried out with regard to the EPA's Best Practice Guidelines for the Preparation and Resource and Waste Management Plans for Construction and Demolition Projects.

13.6.3 Operational Phase Mitigation Measures

The surface water drainage system including the SUDs is to be regularly maintained to ensure components such as petrol interceptor and hydrobrakes remain effective. Grass on swale areas it to be cut to an appropriate length. Rain gardens and bio retention tree pits to be maintained.

Plant and machinery including cars should not be permitted to travel on infiltration areas to avoid over compaction and potential for leaking of hydrocarbons direct to permeable ground surface.

Persistent pesticides should not be used on site to ensure surface water run-off is not impacted by organophosphates and other chemicals.

13.7 Predicted Impact of the Proposed Development

This section allows for 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 that all mitigation measures are fully and successfully implemented. 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 as described in chapter 2.0 of this EIAR document.

13.7.1 Construction Phase

If unregulated the predicted impacts associated with this phase would be expected to included potential disruption to the local natural and human material assets resulting in both short term and long term impacts. The implementation of the mitigation measures set out in this chapter in section 13.6.2, section 13.6.3 and other relevant chapters would ensure that there is unlikely to be any significant residual impact during the construction phase. This would therefore ensure that any impacts were temporary and neutral.

13.7.2 Operational Phase

The proposed development will have a positive impact on the existing urban environment of Balbriggan by creating high quality residential units to cater for the needs of Balbriggan's growing population at a reasonable commute from Dublin city. There is a significant housing demand currently within Dublin and the Greater Dublin area and this development will go some way to address this.

Traffic movements associated with the proposed development are likely to have a long term and neutral impact on the operation of the local road network subject to the recommendations of the Traffic Impact Assessment being implemented.

The predicted waste water volumes from the proposed development will be adequately accommodated within the public sewer network subject to upgrade agreements made with Irish Water. Residual impacts associated with this infrastructure are likely to be long term, neutral and positive.

The proposed development is to implement sustainable urban drainage measures and it therefore unlikely to have any residual impacts in terms of the impact on surface water drainage.

The proposed development is unlikely to have any significant impact on local water, electricity or gas supply networks and the overall impact with respect to these utilities can be described as long term and neutral.

13.7.3 Worst Case Impacts

The EPA Guidelines (2022) provide that the "Worst Case" impacts should be described only where the failure of the project, or its mitigation measures, could lead directly to profound, irreversible or life-threatening consequences.

Systematic risk assessments are only employed where the worst-case impacts pose significant threats to the environment and or human health, e.g. assessments of soils at a site in relation to human health. It is important to note that this is not applicable in case of the proposed development in relation to material assets and that the likelihood of such a scenario occurring in respect of the proposed development is negligible.

13.8 Residual Impacts

Residual Impacts, according to the EPA Guidelines (2022) are: "The final or intended effects which occur after the proposed mitigation measures have been implemented"

It is not anticipated that there will be any residual impacts associated with the proposed development. Therefore residual impacts are negligible.

13.9 Monitoring

Monitoring measures will be in accordance with provisions outlined elsewhere in this EIAR document. Surface water drainage works should be overseen by Fingal County Council relative departments.

Foul sewer construction works will be monitored by Irish Water connections department. Water supply construction works will be monitored by Irish Water connections department.

Execution of the construction and environmental management plan during the construction phase must be monitored by the local authority.

Execution of the operation and maintenance requirement outlined in the operation and maintenance manual for the development must be monitored by the local authority.

13.10 Reinstatement

Not applicable.

- Figure 13.1** Proposed Development Site
- Figure 13.2** Transport Links
- Figure 13.3** Existing Storm and Foul Sewers
- Figure 13.4** Existing Irish Water Infrastructure (Northern Section of the Site)
- Figure 13.5** Existing Irish Water Infrastructure (Southern Section of the Site)
- Figure 13.6** Existing Local Gas Network Supply
- Figure 13.7** Existing Local ESB Network Supply
- Figure 13.8** Eir Utilities
- Figure 13.9** Virgin Media
- Figure 13.10** Bungalow to be demolished

No tables associated with this chapter

- Appendix 13.1** Irish Water Pre-connection query Response Correspondence – Confirmation of Feasibility (CoF) & Statement of Design Acceptance (SODA)
- Appendix 13.2** Drawings of Proposed Buildings to be demolished

14.0 ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

14.1 Introduction

This chapter describes and assesses the archaeological, cultural and architectural heritage of the lands proposed for a Large Scale Residential Development (LRD) at Flemington Lane Balbriggan. The subject site is bounded by the Clonard Road to the west and southwest and Flemington Lane to the north. Existing housing lies to the east and southeast (Figure 1).

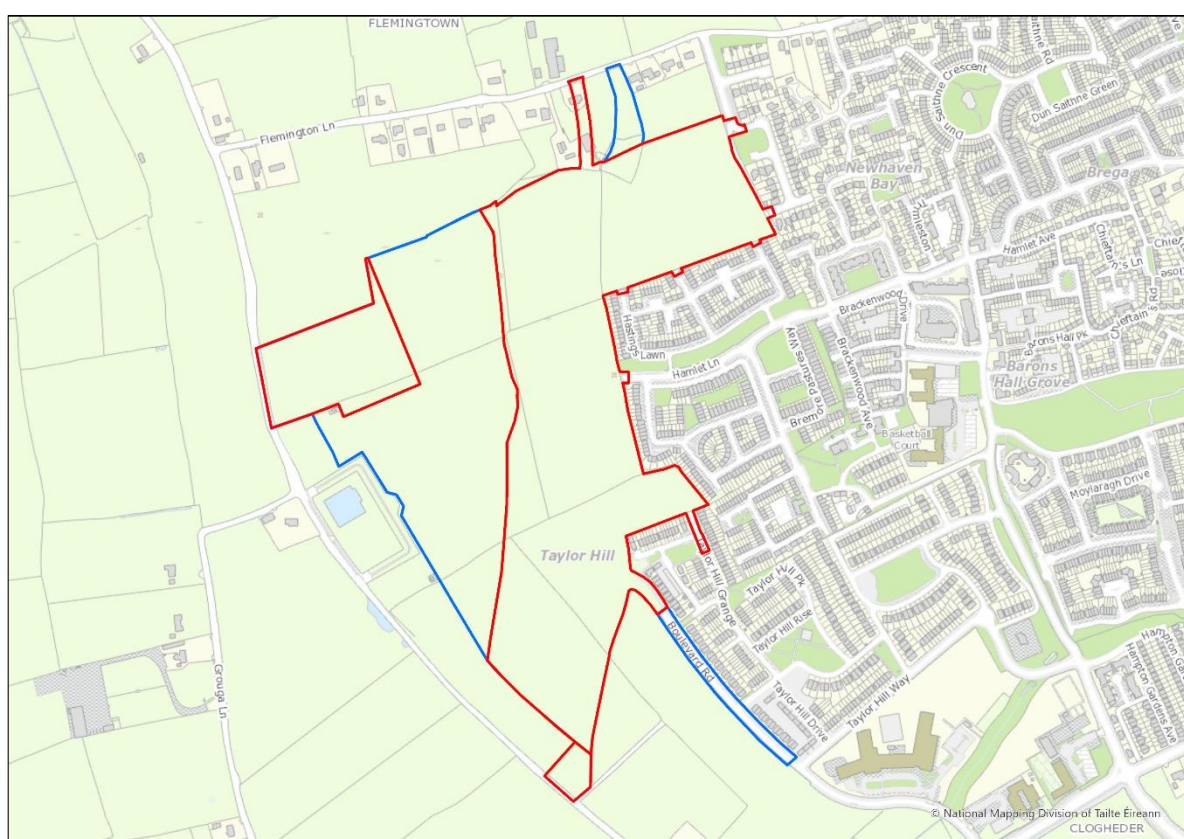


Figure 14.1 Site Location

This chapter describes the archaeological findings as a result of investigations undertaken to assess the potential of the application lands, including geophysical survey, test excavation and excavation which have been undertaken across the site for the previous phases of works.

This chapter has been prepared by Dr Yolande O' Brien and overseen by Lisa Courtney. Supporting investigations were undertaken by Gill McLoughlin.

Dr Yolande O' Brien is an archaeological heritage consultant with Courtney Deery Heritage Consultancy. Yolande holds a BA, MA and PhD in archaeology from University of Galway (formerly NUI, Galway) and is a member of the Institute of Archaeologists of Ireland (IAI). She has 13 years of experience in academic research, field work and impact assessment of a variety of developments throughout Ireland.

Lisa Courtney is a director in Courtney Deery Heritage Consultancy and is an archaeological and heritage consultant with 26 years of experience in development led heritage mediation in development control and planning. Lisa holds a BA (Hons) in Archaeology and a MSc in Environmental Resource Management from University College Dublin.

Gill McLoughlin is a project manager and licensed archaeologist with 24 years of experience. Gill holds

a BA (Hons) in Archaeology from University College Dublin and has test excavated and monitored in many different environments in order to provide robust risk assessment strategies for clients and the statutory authorities. Gill archaeologically tested geophysical anomalies to establish the edges of an archaeological complex on site, and investigated an enclosure previously visible as a cropmark.

14.2 Research Methodology

The methodology has been designed so a full understanding of the potential effects on the character of the historic landscape can be assessed. A detailed archaeological and historical background has been included which describes the character of the immediate and wider historic landscape, as well as the individual heritage assets, and highlights the potential to reveal subsurface features. The methodology used is based on the EPA Guidelines (EPA 2022), and both direct physical effects, as well as impacts to the setting of individual heritage assets, have been assessed.

14.2.1 Desktop Study

The methodology used for this study included desk-based research of published information and unpublished reports to assemble information on the local receiving environment. The following sources were availed of:

- The National Monuments, Preservation Orders and Register of Historic Monuments lists were sourced directly from the Department of Housing, Local Government and Heritage (DHLGH);
- RMP and Sites and Monuments Record (SMR). The SMR, as revised in the light of fieldwork, formed the basis for the establishment of the statutory RMP in 1994 (RMP; pursuant to Section 12 of the National Monuments (Amendment) Act, 1994). The RMP records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. The information held in the RMP files is read in conjunction with published constraint maps. Archaeological sites identified since 1994 have been added to the non-statutory SMR database of the Archaeological Survey of Ireland (National Monuments Service, DHLGH), which is available online at www.archaeology.ie and includes both RMP and SMR sites. Those sites designated as SMR sites have not yet been added to the statutory record, but are scheduled for inclusion in the next revision of the RMP;
- Record of Protected Structures (RPS) and Architectural Conservation Areas (ACAs), Fingal Development Plan (2023-2029);
- Fingal County Development Plan (2023-2029) and Our Balbriggan 2019-2025 Rejuvenation Plan;
- The National Inventory of Architectural Heritage (NIAH) Building Survey and Garden Survey (DHLGH) highlight a representative sample and raises awareness of the wealth of architectural heritage in the county. The NIAH surveys can be reviewed at www.buildingsofireland.ie;
- The topographical files of the National Museum of Ireland;
- Cartographical sources included the Down Survey Maps c.1656 and various editions of the OS Maps;
- Excavations Bulletins and Excavations Database (1970-2023);
- Aerial imagery (OSI Aerial Imagery 1995, 2000, 2005, Aerial Premium 2013-2018, Digital Globe 2011-2013, Google Earth 2001–2023, Bing 2023);
- Geophysical Survey Report, Detection Licence no. 05R0137 (Nicholls 2005);
- Previous archaeological assessment which outlines condition of lands in 2006 (O'Carroll 2006);
- Archaeological Excavation Report, Licence no. 07E0057 (Elliott 2007a);

- Other documentary sources (as listed in the references, Section 14.11).

14.2.2 Guidelines and Legislation

The following legislation, standards and guidelines were consulted to inform the assessment:

- National Monuments (Amendments) Acts, 1930-2014, as amended (Appendix 14.1);
- The Planning and Development Act 2000, as amended;
- Heritage Act, 1995;
- Council of Europe Convention for the Protection of the Architectural Heritage of Europe (Granada) 1985, ratified by Ireland in 1991;
- Council of Europe European Convention on the Protection of the Archaeological Heritage (Valletta) 1992, ratified by Ireland in 1997;
- Guidelines on the information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency (EPA) 2022.
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000 and the Planning and Development Act 2000;
- Guidelines for the Assessment of Architectural Heritage Impact of National Road Schemes, 2005, NRA;
- Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes, 2005, NRA.

14.2.3 Field Inspection

Several phases of fieldwork have been undertaken by Courtney Deery Heritage Consultancy to assess the current condition and archaeological potential of the proposed development lands. This is in addition to consulting previous phases of fieldwork undertaken from 2005-2008 (Nicholls 2005; O Carroll 2006; Elliott 2007a).

Site inspections were undertaken on 21st March 2019, 1st June 2021 and 25th April 2023. This was carried out within the context of an assessment of the archaeological and cultural heritage potential of the application area, taking cognisance of the potential implications of the development on the surviving cultural heritage landscape.

14.2.4 Archaeological Test Excavation

Archaeological testing was carried out in May 2021 to inform the design of the development and the appropriate mitigation strategy of an SHD application which was not progressed. This programme of testing has consequently been used in the design and mitigation of this LRD application. The full report is included in Appendix 14.4 of this report.

In total 20 trenches were excavated, including one test trench to target the newly discovered sub-surface enclosure designated DU001-033 visible on Google maps (June 2018). The purpose of the programme of archaeological testing was to establish the extent of archaeological remains associated with field system DU001-023 and possible enclosure DU001-024. The proposed development layout allows for the preservation in situ of the main concentration of features that make up field system DU001-023, but some features around the edges may be impacted by the development and the testing layout was designed to assess this impact. Dispersed features to the north of the main concentration, in an area proposed for development, were also assessed, as was a possible enclosure (SMR DU001-

024) indicated on geophysical survey to the northwest of the main concentration of activity. It should be noted that DU001-024 has been mislocated on www.archaeology.ie where it is shown as being approximately 250m to the south-east of its actual location (Figure 14.2).

14.2.5 Impact Assessment

The assessment of the likely significant effects on the environment resulting from the construction and/or operation of the proposed development relies on a combination of qualitative and quantitative assessment.

Cultural heritage sites/landscapes are considered to be a non-renewable resource and cultural heritage material assets are generally considered to be location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could affect these sites. The likely significance of all effects is determined in consideration of the magnitude of the effects and the baseline rating of the cultural heritage asset (i.e. its sensitivity or value). Having assessed the magnitude of effect with respect to the sensitivity/value of the asset, the overall significance of the effect is then classified as imperceptible, not significant, slight, moderate, significant, very significant or profound. A glossary of impact assessment terms, including the criteria for the assessment of impact significance, is contained in Appendix 14.2 Assessment Methodology.

Cultural heritage is a broad term that includes a wide range of tangible and intangible cultural considerations. It encompasses aspects of archaeology and architecture and is expressed in the physical landscape as well as in non-physical ways. Cultural heritage can relate to settlements, former designed landscapes, building and structures, as well as folklore, townland and place names, historical events and traditions. Archaeological sites that are afforded protection as Recorded Monuments are regarded as being of high importance. Cultural heritage sites with upstanding features which are not afforded protection under the above criteria are considered to be of medium importance.

In accordance with the NRA 'Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes' (2005), the significance (i.e. value) criteria used to evaluate an archaeological site, monument or complex are as follows: existing status (level of protection), condition or preservation, documentation or historical significance, group value, rarity, visibility in the landscape, fragility or vulnerability, and amenity value. The archaeological and cultural heritage environment is assigned a baseline rating, taking into account the importance, value and/or sensitivity of the receiving environment (Table 3, Appendix 14.2 Assessment Methodology).

14.3 Receiving Environment

14.3.1 Archaeological and Historical Background

14.3.1.1 Prehistory

Recent excavations have shown that the wetlands in Clonard / Folkstown Great, immediately south of the application site were being exploited as early as the Mesolithic period (McGlade 2019; Licence no. 15E0586). A pathway defined by two parallel gullies, was interpreted as possibly representing access to the wetlands and a nearby watercourse.

The Neolithic period is well represented in this part of North Dublin, which is located only 1.8km from the coast. The hilltop location of the application site would have provided extensive views and the light soils were desirable for prehistoric farming practices, while proximity to the sea would have facilitated both trade and communication. There are also extensive views within the application area towards the Neolithic passage tomb cemetery at Fourknocks, Co. Meath.

An Early Neolithic house was excavated approximately 36m east of the application site (SMR DU001-014; Bolger 2006a; Licence no. 05E0663) on a north-south oriented ridge, which most likely accommodated further settlement and agricultural features. Test excavations throughout the application lands have revealed numerous pits and linear features which have the potential to also date from this period. This is supported by the discovery of a flint blade within a linear feature in Field 9 (SMR DU001-028; Site 9/1 in Elliott 2007a) to the south of the house, just outside of the application site boundary.

Excavations carried out in relation to a housing development in adjacent lands in 2018 identified a curvilinear channel and a possible hearth, both of which were suggested to date to the Neolithic period on the basis of lithic finds (Purcell 2019, Licence No. 18E0238).

There is also significant evidence in the area for settlement and funerary activity in the Middle and Late Bronze Ages. A Middle Bronze Age house was discovered 566m southwest of the site in Clonard / Folkstown Great (SMR DU004-046), and excavations within the application area suggest the existence of further Bronze Age settlement within the lands. A curving ditch of Middle Bronze Age date may have formed a hilltop enclosure which accommodated settlement activity, including areas of metalling (level floor / yard surfaces made of small stones), several linear features, large quantities of struck and worked flint, and four barbed and tanged arrowheads (Elliott 2007b; Licence no. 07E0361). Two truncated burnt mounds (most commonly interpreted as outdoor cooking sites) were identified downslope of this area in a separate excavation (Bolger 2006b; Licence no. 05E0663) and they most likely represent the use of wetter marginal lands by the occupants of the hilltop site.

The Late Bronze Age is represented in the area by an enclosure located 520m north of the application site in Flemingtown (SMR DU001-031; Byrnes 2002; Licence no. 02E0297). Excavations revealed Bronze Age coarse pottery and burnt and unburnt bone, suggesting the feature was a ring-ditch burial site. Radiocarbon dating suggested a construction date in the Late Bronze Age with activity which continued into the Late Iron Age (986-817 cal. BC and 217-344 cal. BC).

Another area of Bronze Age activity was identified approximately 400m southeast of the application area in Clonard / Folkstown Great and excavated under two licences (McGlade 2016; Licence no. 15E0586; and McLoughlin 2018; Licence no. 15E0558). It included a penannular enclosure, cremation pit, ring-ditch, four burnt mound / burnt spread sites and a possible routeway. The enclosure may have had a palisade in the ditch, and finds included probable Late Bronze Age pottery, a possible clay mould and a grinding stone. The cremation pit was southeast of the entrance and contained cremated bone, possible prehistoric pottery and tubular copper alloy beads.

The ring-ditch burial included burnt human bone dating to the Late Bronze Age (969-807 cal. BC; 2725 ± 37 BP; UBA 31819) and a deposition of six water-rolled flint pebbles. Animal bone included a horse femur which could not be dated, but which, if of similar date to the human bone, may represent some of the earliest horse bone in Ireland. The area was on the edge of a wetland environment, sloping towards a stream to the south, and the Bronze Age inhabitants made use of this environment for four outdoor cooking sites in the form of burnt mound / burnt spread / *fulacht fiadh* sites.

Beyond the stream, another site excavated in advance of the Parkway Link Road was thought to be Bronze Age in date, comprising a 32m ditch and associated pit containing heat-cracked stones and traces of cremated bone (Linnane 2008, Licence no. 08E0106).

Approximately 250m east of the application area in Clonard / Folkstown Great, test-trenching was carried out in 2017 to define a zone of preservation around recorded enclosure SMR DU001-020 and to retrieve dating material (McLoughlin 2019; Licence No. 17E0247). The testing identified Late Bronze Age pottery and a sample of charred cereal retrieved from the enclosure ditch was subsequently radiocarbon dated to 895-802 BC. Peripheral features identified during monitoring of the remainder of the site comprised a rectangular trough consistent with burnt mound activity which also dated to the late Bronze Age (831-552 BC) and two pits containing flint scrapers, flakes and cores, along with a single sherd of Beaker pottery and a single sherd of later middle Bronze Age pottery, representing further Bronze Age activity.

Test-trenching along the route of the Parkway Link Road revealed one archaeological site, approximately 874m southeast of the application site (SMR DU005-117; Excavation – miscellaneous; Linnane 2008; Licence no.: 08E0106). It comprised a 32m long northeast by southwest oriented ditch with an associated pit. Both contained charcoal-rich fills with heat-cracked stone and traces of cremated bone and were thought to be of Bronze Age date.

These sites demonstrate that there was probable continuity of activity on the hilltop in Flemingtown from the Neolithic to the Middle Bronze Age period. The burial sites date to the Late Bronze Age and appear to be located downslope of the main occupation area both on the north and south, with a significant cluster of associated features found in Clonard / Folkstown Great adjacent to the stream.

Evidence of Iron Age occupation is increasingly being found on multi-period sites such as those within the study area, and as an example of this, an Iron Age phase was noted at a ring-ditch burial site in Flemington (SMR DU001-031; Byrnes 2002; Licence No. 02E0297). Given the existence of both Bronze Age and Early Medieval sites in this area, it is likely that Iron Age continuity exists within these lands and that some of the features identified within previous assessments date to this period.

14.3.1.2 Early Medieval Period

Prior to the excavations of the 2000s in this area, the only known site which was likely to be of this period was the holy well at the northern edge of the application site, known as Lady Well (RMP DU001-004). Since then, a series of excavations in Flemington and Clonard / Folkstown Great have revealed an extensive and organised early medieval landscape.

An extensive early medieval site is located within the application site and immediately to the east in Flemington (SMR DU001-015 & -023). This early medieval site has been investigated through geophysical survey and extensive archaeological investigations (Bolger 2006a; Bolger 2006b; Elliott 2007b; Leigh 2005; Nicholls 2005). It includes a large enclosure site on a north-south ridge (SMR DU001-015), as well as an associated field system (SMR DU001-023), both of which extend into the application site. The southern extent (outside of the application site boundaries) included an industrial site (SMR DU001-016) and corn-drying kiln (SMR DU001-017); no evidence of habitation was found in that part of the site. Extensive ditches appeared to organise the site and created a complex water management system. A sample from one of the ditches radiocarbon dated it to AD 1002-1013.

The northern half of the early medieval site (partly within the application site) included a substantial ditch which appeared to delimit the site and other ditches and linear features associated with water management and agriculture (Elliott 2007b; Licence no. 07E0361). Further areas of industrial activity were evident in the form of iron-working pits and two kilns. A souterrain was also discovered on the northern side of the enclosure, consisting of two chambers and a passageway; a bone needle was among the finds recorded.

While the site seems quite similar to other early medieval enclosure complexes, there was little evidence for habitation or structures in the southern portion excavated by Bolger (Bolger 2006a; Bolger 2006b; Licence no. 05E0663), and while structures were identified in the northern portion excavated by Elliott (2007b; Licence no. 07E0361), they are of unknown date.

14.3.2 Recorded Archaeological Sites (RMP / SMR Sites)

There are six SMR sites within the application site (SMR DU001-022001 – Excavation, miscellaneous, DU001-022002 – Pit, DU001-023 – Field system, DU001-024 – Enclosure, DU001-026 – Excavation, miscellaneous, DU001-033 – Enclosure; Figure 14.2). A holy well (RMP DU001-004) is located directly adjacent to the northern boundary of the proposed development. The Zones of Notification (ZoN) for a further three SMR sites extend into the site boundaries (SMR DU001-014 – Neolithic house, DU001-015 – Enclosure, DU001-027 – Enclosure).

One site, a holy well (RMP DU001-004) is a designated RMP site on the published 1998 Record of Monuments and Places (RMP) and is the only archaeological site in the vicinity visible above ground. The well, known as Lady Well, is located adjacent to the northern boundary of the proposed development site. Site inspection found the well to appear as a hollow of approximately 4m by 5m diameter with a small amount of water but much clogged with earth and mud.

All of the other sites are subsurface remains which have been revealed through geophysical survey, aerial imagery, test excavations and excavations. The sites are listed and described in Table 2 below and are also discussed in Section 14.3.1 of this report.

The following clarifications should be noted:

- DU001-024 (Enclosure): The description on the Historic Environment Viewer (HEV, available at www.archaeology.ie) of this site refers anomalies detected by Nicholls (2005) and features

identified by Elliott (2007a) which are named in her report as Site 4/1 and Site 4/2. These sites are located within the application site and it is therefore evident that the SMR record has been misplaced outside of the redline boundary (See Figure 14.2).

- DU001-026 (Excavation – miscellaneous): The description on the HEV of this site refers to anomalies detected by Nicholls (2005) and features identified by Elliott (2007a) which are named in her report as Site 7/1. This site is located approximately 75m south of the existing SMR point data (See Figure 14.2).
- DU001-015 (Enclosure): This large enclosure site was partially excavated in adjacent lands, now occupied by the Hastings residential estate. A field system – the majority of which lies within the application area – identified immediately to the north of the enclosure site was added to the Sites and Monuments Record (SMR) under a separate number DU001-023, but is likely to represent a continuation of the early medieval activity excavated at the enclosure site (DU001-015).
- DU001-025 (Enclosure): This enclosure site is located outside of the application lands. The description on the HEV refers to anomalies detected by Nicholls (2005) and features identified by Elliott (2007a) which are named in her report as Site 6/1. This site is located approximately 60m southwest of the existing SMR point data (See Figure 14.2).
- DU001-027 (Enclosure): This enclosure site is located adjacent to the application lands with the ZoN extending into the proposed development site. The description on the HEV refers to anomalies detected by Nicholls (2005). This site is located approximately 35m northwest of the existing SMR point data (See Figure 14.2).

RMP / SMR no.	Description
DU001-004	<i>Ritual site – holy well:</i> Natural spring well situated in an area of rock outcrop adjacent to farm buildings. Enclosed by a recently constructed ditch and bank which was built to keep farm animals out. Annotated 'Lady Well' on all editions of the OSi historic maps. Described by Ó Danachair (1958, 72) as a 'small pool c. 5' x 3', between 2 flat rock in the corner of a small garden, with a good spring. No devotions now, but known as a holy well'. Lady Well described in 1974 by Henry A. Wheeler as a small pool with concrete dam, apparently used for watering animals' (SMR File 14/05/1974). Comprises a roughly circular, water filled depression into which modern field drains empty. It was once a large structure and water was channelled through the rock into a small stream (Skyvova 2005, 51). The site has been used as a dumping ground of recent years. Geophysical prospecting within the field immediately to the east of the holy well picked up natural and ferrous anomalies but no definite archaeological sites (Nicholls 2005).
DU001-014	<i>House – Neolithic:</i> Pre-development investigations in 2005 identified evidence dating from the Neolithic through to the early medieval period. The earliest activity at the site was a house, oriented roughly north-south (L 10m, Wth 6m) which dates to the Neolithic period. The footprint of the building was wholly defined by a slot trench, suggesting that the structure was plank-built with evidence for a doorway on the west side. A substantial assemblage of early Neolithic pottery and struck flint were retrieved from the slot trench. This produced a radiocarbon date of 3394-3387 cal. BC (Bolger 2009, 25-26).
DU001-015	<i>Enclosure:</i> Pre-development investigations in 2005 revealed a multiple-ditched enclosure. There was no indication of a habitation area within the excavated portion of the site and only very limited evidence for structures. One of the ditches produced a calibrated radiocarbon date of AD 1002-1013 (Bolger, 2009, 27-29). <i>*Note that this site extends into the application area to field system DU001-023.</i>
DU001-016	<i>Industrial site:</i> Pre-development investigations in 2005 revealed evidence for metalworking in the form of bowl furnaces with associated pits. A large quantity of ferric slag was retrieved from the site (Bolger 2009, 32).
DU001-017	<i>Kiln – corn-drying:</i> Pre-development investigations in 2005 revealed a cluster of kilns including one keyhole-shaped feature with a perfectly circular chamber (Diam.2.60m, D 0.05m-0.24m) and a flue or passage which exited the chamber on the west. The upper stone of a rotary quern was also uncovered (Bolger 2009, 32-33).

RMP / SMR no.	Description
DU001-022001	<i>Excavation – miscellaneous:</i> Geophysical survey identified a series of anomalies that suggested the presence of potential archaeological features (Licence no. 05R0137; Nicholls 2005). Test excavation (Licence no. 07E0057) confirmed the presence of a dense pit cluster interspersed with a series of linear features and curving ditches within an area measuring 45m by 50m. A piece of struck flint was recovered from a linear feature suggesting a prehistoric date (Elliott 2007a). <i>*Site 2/2 in Elliott 2007a.</i>
DU001-022002	<i>Pit:</i> Geophysical survey identified a series of anomalies that suggested the presence of potential archaeological features (licence no. 05R0137). Test excavation confirmed the presence of a pit cluster that consisted of at least six pits, circular in plan (average 0.30m diam.) with similar charcoal-rich fills with burnt bone inclusions (Elliott 2007a). <i>*Site 2/1 in Elliott 2007a.</i>
DU001-023	<i>Field system:</i> Geophysical survey identified strong linear and rectilinear responses that suggest a large complex at the interior of which are numerous internal divisions, pit-type responses and possible industrial activity (Licence no. 05R137; Nicholls 2005). Possibly a continuation of early medieval activity excavated immediately to the south (DU001-015).
DU001-024	<i>Enclosure:</i> Geophysical survey identified a series of anomalies (Licence no. 050R137; Nicholls 2005). Test excavation confirmed the presence of a series of ditches (average 0.30m deep) that form a sub-square enclosure (Licence no. 07E0057; Elliott 2007a). <i>**Sites 4/1 and 4/2 in Elliott 2007a. Note that the SMR point data is in the incorrect location. The correct location is within the application site in Field 4.</i>
DU001-025	<i>Enclosure:</i> Geophysical survey identified a series of anomalies thought to represent a series of conjoined enclosures with several large pit-type anomalies (Licence no. 050R137; Nicholls 2005). Test excavation confirmed the presence of a cluster of pits and related linear and curvilinear features. Fill of features consisted of charcoal-rich soil, some with burnt bone inclusions (Licence no. 07E0057; Elliott 2007a). <i>**Site 6/1 in Elliott 2007a. Note that the SMR point data is in the incorrect location. The correct location is 60m to the southwest and is located outside the application site within the land ownership boundary in Field 6.</i>
DU001-026	<i>Excavation – miscellaneous:</i> Geophysical survey identified a series of anomalies thought to represent a series of conjoined enclosures with several large pit-type anomalies (Licence no. 05R0137; Nicholls 2005). Test excavation (Licence no. 07E0057) confirmed the presence of a cluster of pits and possible structural features within an area 30m x 60m under redeposited natural. Burnt and charcoal fills were predominant (Elliott 2007a). <i>*Site 7/1 in Elliott 2007a. Note that the SMR point data is in the incorrect location The correct location is 75m to the south in Field 7.</i>
DU001-027	<i>Enclosure:</i> Geophysical survey identified the remains of a circular enclosure, of probable stone origin, measuring approximately 30m in diameter (Licence no. 05R0137; Nicholls 2005, 9). <i>*Note that the SMR point data is in the incorrect location The correct location is 35m to the northwest in Field 8.</i>
DU001-028	<i>Excavation – miscellaneous:</i> Test excavation identified a V-shaped linear feature orientated NW / SE (Licence no. 07E0057; Elliott 2007a). A flint blade was recovered from the fill suggesting a prehistoric date. In the field to the northeast is a Neolithic house (DU001-014).
DU001-029	<i>Pit:</i> Test excavation identified a large circular pit with charcoal-rich fill. A flint blade was recovered from the fill suggesting prehistoric date for the feature (Licence no. 07E0057; Elliott 2007a).
DU001-032	<i>Ring-ditch:</i> Located at the southeast corner of a large arable field. The ring-ditch, one of a number of cropmark sites west of Balbriggan, is clearly visible on Apple Maps (June 2018). Site comprises a circular ring-ditch (Ext. diam c. 13m) defined by a ditch (Wth. c. 2m), where visible.
DU001-033	<i>Enclosure:</i> Located at the southeast corner of a large arable field the southern half of a circular enclosure, one of a number of cropmark enclosures west of Balbriggan, is clearly visible on Google Earth imagery (24 June 2018). Site bisected by later field boundary with enclosure most clearly visible in arable field to south. It comprises a circular enclosure (Ext. diam. c. 35.4m) defined to the south by a ditch (Wth. c. 1.3m). Other linear and curvilinear cropmarks to the east and west may be associated with the enclosure. <i>*The enclosure appears to extend into the adjacent field, where the ground level was reduced to facilitate a compound area by another developer. A park is now located in the former compound.</i>

Table 24.1 RMP / SMR sites in and adjacent to application lands (Descriptions from www.archaeology.ie)

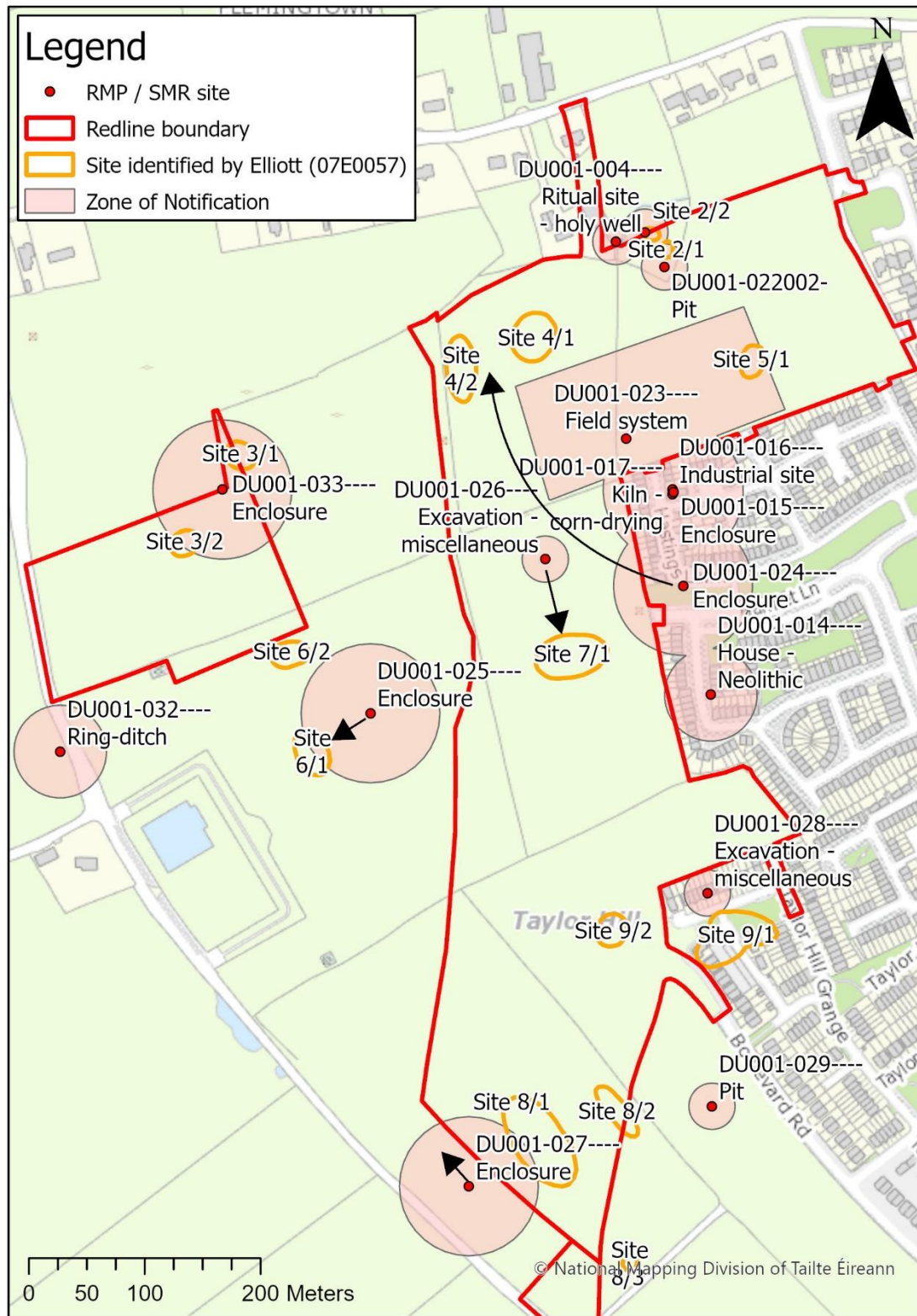


Figure 14.2 RMP / SMR sites within and adjacent to application site

14.3.3 Summary of Archaeological Investigations

For clarity and continuity, this chapter of the EIAR will reuse the field numbers applied during previous archaeological surveys and investigations that have taken place within and immediately adjacent to the application area. The field numbers were detailed in the geophysical survey report in 2005, where Field 1, Field 2, etc. are labelled F1, F2, etc., and were used to identify newly discovered sites, i.e. sites 2/1

and 2/2 are located in Field 2 or F2. This numbering convention was followed in the recent report on archaeological testing carried out within the application site (McLoughlin 2021; Licence no.: 21E0298). Archaeological investigations outside of the proposed development are outlined in Appendix 14.3 of this EIAR.

14.3.3.1 Archaeological Assessment (OCarroll 2006)

An archaeological assessment of the lands of the discontinued North West Balbriggan Area Action Plan was carried out by Ellen OCarroll of The Archaeology Company in 2006. The assessment included a geophysical survey (Nicholls 2005; below), site walkover, documentary and cartographic research and the production of a report.

14.3.3.2 Geophysical Survey (Nicholls 2005; 05R0137)

A gradiometer scan was undertaken across the lands, with detailed survey undertaken in areas where anomalies were detected (Figure 14.3). Several anomalies were identified within the lands, five of which were later added to the SMR. A large settlement complex was identified in F4 and F5, measuring approximately 200m north-south by 120m east-west and extending further southeast beyond the survey area and the site boundaries. It was added to the SMR as a field system (SMR DU001-023) conjoined with the enclosure (SMR DU001-015) which extends into the adjacent lands.

Several pit-type features were detected in the north of the area in Field 2 which were later included in the SMR as DU001-022001 and -022002.

Outside of the application lands but within the land ownership in Field 6, a series of conjoined enclosures identified over a 30m by 60m area were suggestive of a prehistoric settlement and were later recorded in the SMR as an enclosure (SMR DU001-025). A small, truncated enclosure or possible barrow was identified in the southwest of the area in Field 8, and this was later added to the SMR as an enclosure site with a ZoN which extends into the application site (SMR DU001-027).

A summary of the geophysical survey results is as follows:

Field 1: The detailed survey was outside of the proposed development site. Several weak trends were noted but they are likely to be of natural or modern origin.

Field 2: The detailed survey showed anomalies consistent with natural soil variations (See Section 14.3.3.4 for Elliott's (2007a) testing of these features).

Field 3: F3 was excluded from the survey because of the presence of dense, tall weeds obstructing survey.

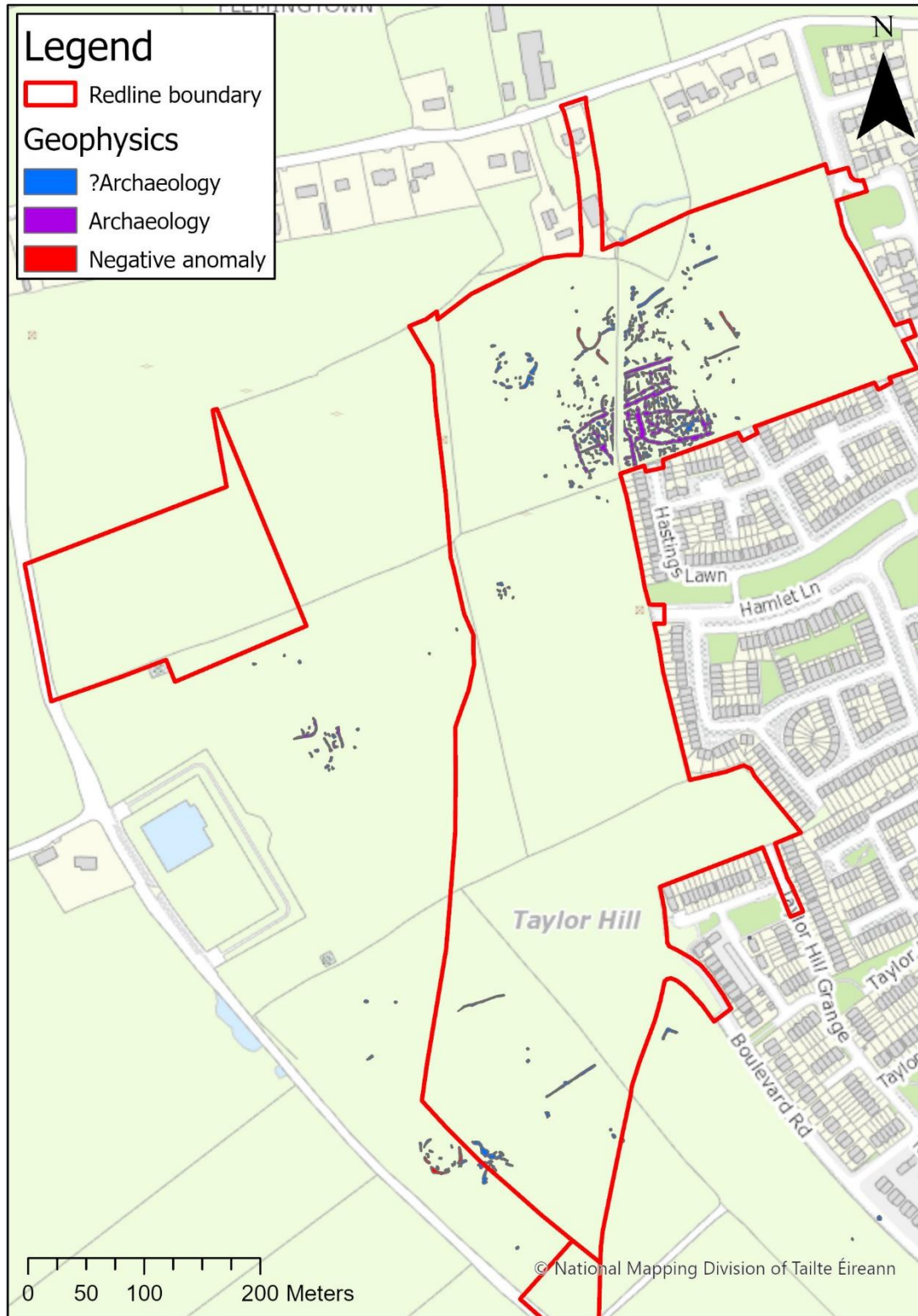


Figure 14.3 Field numbers and geophysical survey areas, 05R0137

Field 4: An area of broad fluctuations was spread between F4 and F5, measuring approximately 200m north-south by 120m east-west (Figure 14.4). These were thought to represent a continuation of a separate survey undertaken south of these fields (Leigh 2005; Licence no. 05R0114; SMR DU001-015).

Two areas of F4 and two in F5 were subjected to detailed survey, which showed a dense concentration of magnetically strong linear and rectilinear responses in Area 4B and Area 5B. It appears to be a large settlement complex with an interior comprising numerous internal divisions, pit-type features and possible industrial activity. The anomalies were added to the SMR as a field system (SMR DU001-023), with the majority of the adjacent enclosure site (SMR DU001-015) also extending into this area.

The anomalies continued southeast beyond the area under investigation. Ditches, linear features and pit-type features continue north beyond the main settlement complex into areas 4A and 5A (See Section 14.3.3.7 for McLoughlin's (2021) testing of the edges of this complex).

Part of a circular enclosure (1) was detected at the eastern edge of Area 4A and a possible stone enclosure (or associated structures) was noted south of this (2), although Nicholls notes that frost cracking in underlying glacial till can cause such anomalies (See Section 14.3.3.7 for McLoughlin's (2021) testing of this feature). A series of pits and trends appear to form a circular or sub-square enclosure (3) in the west of Area 4A. This feature was added to the SMR DU001-024, but as noted in Section 14.3.2, it is currently being projected to the incorrect co-ordinates on www.archaeology.ie (See Sections 14.3.3.4 and 14.3.3.7 for Elliott's (2007a) and McLoughlin's (2021) testing of this feature).

An area of ferrous material in the northern extent of Area 4A and an electricity pole (7) caused some interference in the survey.

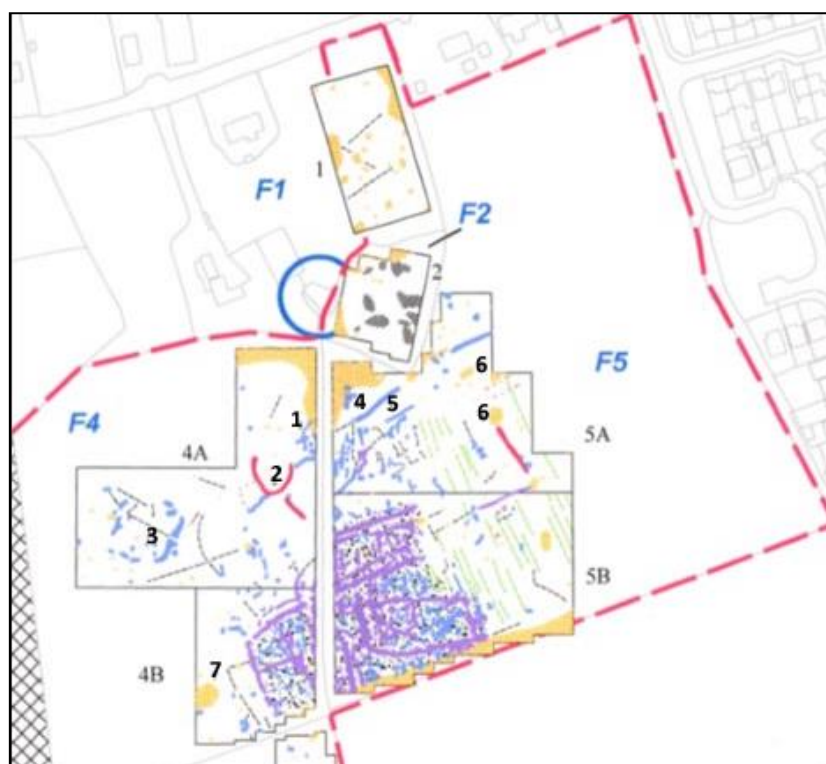


Figure 14.4 Geophysical survey of Fields 1, 2, 4 & 5; SMR DU001-023 (Nicholls 2005)

Field 5: The field system noted in F4 extended into F5, Area 5B (SMR DU001-023; Figure 14.4). Four pit-type features (4) were detected in Area 5A. A linear feature (5) may represent the continuation of the field boundary defining the eastern edge of F2 (See Section **Error! Reference source not found.** for McLoughlin's (2021) testing of this feature).

Field 6: Five areas (6A-6E) of detailed survey were undertaken in F6, of which only a very small portion of Area 6B is within the boundaries of the proposed development (Figure 14.2). No features of archaeological potential were identified within the development boundaries of F6. The most significant feature detected in F6 was a small complex of linear and curvilinear responses in Area 6D (8) which were thought to represent the remains of a series of conjoined enclosures. This was later recorded in the SMR as an enclosure (SMR DU001-025) but with a slight

error in the co-ordinates on www.archaeology.ie (See Section 14.3.2).



Figure 14.2 Geophysical survey of Fields 6 & 7 (Nicholls 2005)

Field 7: Two areas (Areas 7A and 7B) were subjected to a detailed survey in F7 (Figure 14.2). No definitive archaeological-type anomalies were detected in Area 7A and it was not apparent if the settlement / field system extended from F4 and F5. A cluster of responses (10) were detected in Area 7B, but they did not form any clear archaeological patterns.

Field 8: Five areas (Areas 8A-8E) were subjected to detailed survey in F8, of which 8D and parts of 8B, 8C and 8E are within the boundaries of the proposed development (Figure 14.7). The remains of a possible circular stone enclosure or barrow (11) was noted in Area 8B outside of the proposed development, measuring c. 30m in diameter. This feature was later added to the SMR as an enclosure site (SMR DU001-027), although it is currently projected in the incorrect location on www.archaeology.ie (See Section 14.3.2). A cluster of responses (12) in Area 8C within the proposed development site may be natural in origin, but it is possible that they are archaeological in origin. Two possible field boundaries (13) run parallel to each other in Area 8D.

Field 9: Part of F9 was excluded from the survey due to the presence of potato crops (Figure 14.6). Two areas were subjected to detailed survey (Areas 9A and 9B), of which part of 9A is within the proposed development. Several natural anomalies were detected with one feature (14) in Area 9A representing the corner of a possible enclosure. This feature is outside of the site boundaries.



Figure 14.6 Geophysical survey of Fields 8 & 9 (Nicholls 2005)

14.3.3.3 Geophysical Survey (Leigh 2007; 07R0009)

A second geophysical survey was undertaken in 2007 which targeted areas which were inaccessible due to crops etc. in the original survey. This included Field 3, with one area (Area C) within the application lands.

Field 3: Many of the anomalies detected in Area C of F3 are consistent with natural geological features. Some magnetically stronger features were perhaps of archaeological interest, but natural variations were thought to be more likely (Figure 14.7).

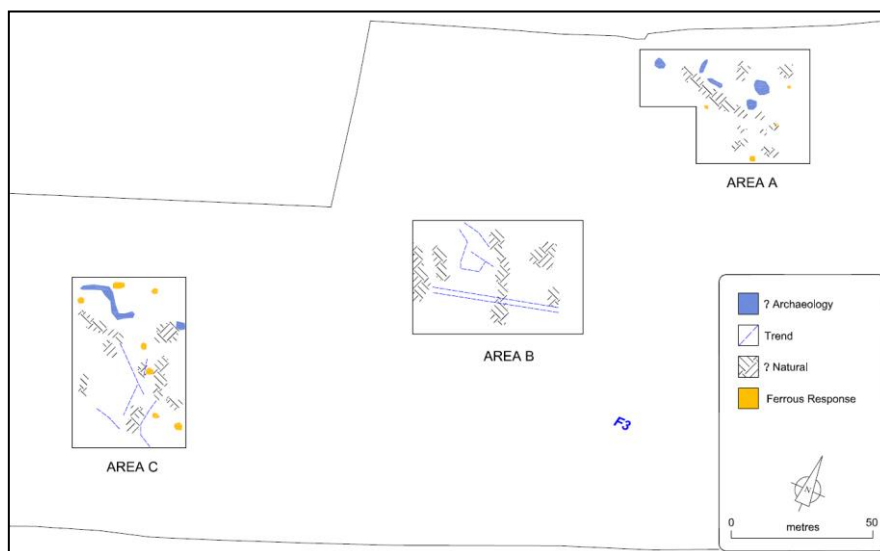


Figure 14.7 Geophysical survey of Field 3 (Leigh 2007)

14.3.3.4 Archaeological Testing (Elliott 2007a; 07E0057)

A programme of test excavation was undertaken over the lands of north-west Balbriggan following the results of the geophysical survey (Figure 14.8). This testing was undertaken in advance of a previous phase of development which was never implemented within the old Balbriggan North West Local Area Plan.

This programme of archaeological testing had taken place over a larger area, comprising 22 fields, revealing a total of 38 archaeological sites. Of 155 test trenches, 54 are wholly or partly within the proposed development site. Elliott notes that some of the smaller, isolated sites may form the outer edges of larger archaeological complexes. The pit clusters in F2 with possible curvilinear ditches (Sites 2/1, 2/2; SMR DU001-022001, DU001-022002) may be of this nature, as would the pit clusters in F6 (Sites 6/1, 6/2; SMR DU001-025; Enclosure). In the case of both fields, burnt bone may suggest cremation activity.

At the time of these investigations, it was agreed with the National Monuments Service that preservation in-situ (in the form of an Archaeology Park) would be the best approach for the large enclosure and field system (SMR DU001-015, DU001-023) in F4 and F5 that was identified in the geophysical survey, which is the reason this area was not tested at that time.

All other sites identified in these investigations were designated 'Low Significance' and a strategy of excavation or 'Preservation by Record' was scheduled but never realised.

Excluding the field system and enclosure (SMR DU001-023, DU001-015) which were not tested, 12 of the 38 sites identified as a result of the testing exercise were located within the current application site. The results of testing within the proposed development site are as follows:

Field 1: Testing within F1 did not extend into the proposed development site.

Field 2: Three test trenches (5-7) were excavated revealing post-medieval stone drains, ditches and modern service lines. Two areas of archaeological significance were identified. **Site 2/1** comprised a dense pit cluster interspersed with a series of linear features and curving ditches across an area measuring 45m by 50m in the centre-west of the field. A piece of struck flint suggests a possible prehistoric date. The site was later added to the SMR as 'Excavation – miscellaneous' (SMR DU001-022001). **Site 2/2** comprised a pit cluster over a 15m area with charcoal-rich fills and occasional burnt bone inclusions. This site was later added to the SMR as 'Pit' (SMR DU001-022002).

Field 3: Five test trenches were excavated in F3, of which four (155-158) are wholly or partially within the proposed development site. Post-medieval drains and modern services were found throughout the field. Some ditches were identified which may be of archaeological potential, but most are likely to represent field boundaries and medieval drainage features. Two areas of archaeological significance were revealed. **Site 3/1**, which is partially within the proposed development site, comprised a series of linear and curvilinear features in the northwest area of the field, one of which formed a broad arc which may continue to form a circle of c. 10m. **Site 3/2**, which is within the proposed football pitch, comprised a large pit with charcoal fills.

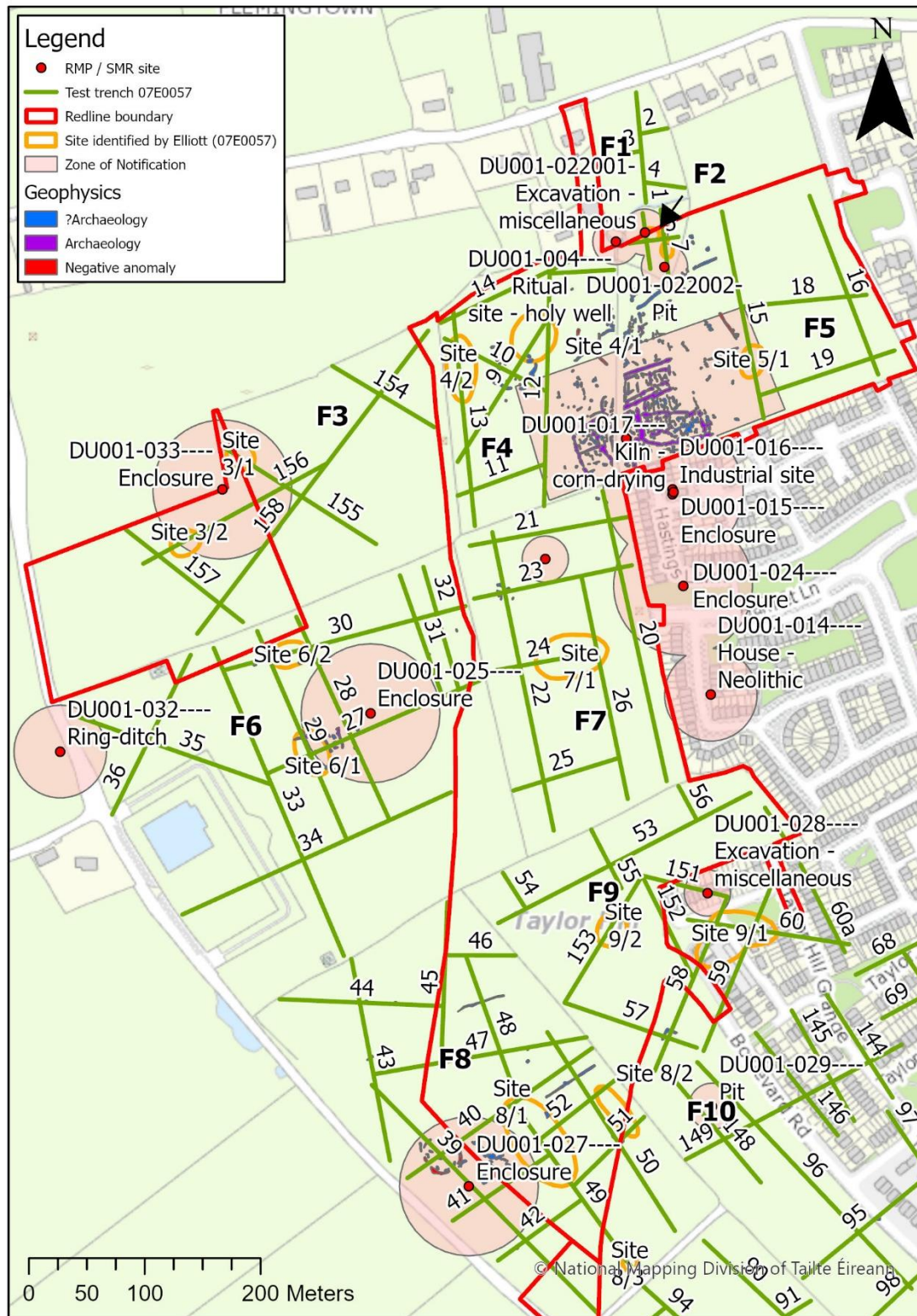


Figure 14.8 Test trench layout under Licence 07E0057 with identified sites and geophysical survey results

Field 4: No test trenches were placed within the field system area (SMR DU001-023). Seven trenches (8-14) were proposed in the remainder of the field. Overhead power lines prevented the excavation of Trench 11 and the southern portions of Trenches 12 and 13. Testing revealed post-medieval drainage features and modern services. Two areas of archaeological significance were discovered. **Site 4/1**

comprised a series of ditches which was thought to be related to the eastern side of the sub-square anomaly (3) which was identified in the geophysical survey. **Site 4/2** comprised two ditches and a pit which was thought to have been related to the western side of the same sub-square anomaly. The description of these sites, comprising a series of ditches with an average of 0.30m depth, corresponds with the description of the sub-square enclosure (SMR DU001-024) which has been wrongly located on the webGIS service at www.archaeology.ie (See Section 14.3.2). It is unclear from these results if they form part of an enclosure as suggested by Elliott. The coordinates of the test trenches and identified sites do not correspond with the sub-square anomaly detected by Nicholls (2005). It is possible that rather than representing an enclosure, these features are part of a series of ditches and pits of which several have been identified across the proposed development.

Field 5: No test trenches were placed within the field system area (SMR DU001-023). Four test trenches (15-16, 18-19) were excavated in the remainder of the field, revealing post-medieval stone drains and drainage / agricultural features. Ditches forming former field boundaries depicted in historical mapping crossed Trenches 15 and 16. One area of archaeological potential was identified, **Site 5/1**, a potential enclosure and linear feature, possibly related to the settlement / field system to the west.

Field 6: The southern boundary of F6 acts as townland boundary between Flemington and Clonard / Folkstown Great. Ten test trenches (Trenches 27-38) were excavated within this field, although a 60m exclusion zone on the western extent of F6 could not be trenched. Only the northern ends of Trenches 28, 29, 33 and 36 and the west end of Trench 27 and 30 are within the proposed development site. Post-medieval stone drains, ditches and modern services were revealed and two archaeological areas were identified, both of which are located outside of the proposed development site. **Site 6/1** comprised a complex of archaeological features in an area of approximately 10m by 45m, including a pit cluster with charcoal-rich fill and burnt bone inclusions. The pit cluster is surrounded by a series of linear and curvilinear features which appear to be related. This corresponds with Anomaly 8 from the geophysical survey and was later added to the SMR as an enclosure site (SMR DU001-025). This indicates that the site is currently being projected to the incorrect co-ordinates on the webGIS at www.archaeology.ie. **Site 6/2** was a cluster of three pits located in the centre-north of the field in a trench span of 15m long, with evidence of burning and containing charcoal inclusions. It may be associated with Site 6/1 40m to the south.

Field 7: The southern extent of F7 acts as the townland boundary between Flemington and Clonard / Folkstown Great. Seven test trenches (Trenches 20-26) were excavated revealing post-medieval stone drains and modern linear features. Four ditches may be of archaeological significance, but are most likely related to post-medieval drainage, and a continuation of existing field boundaries. One site of archaeological potential was revealed in the middle of the field in Trenches 24 and 26: **Site 7/1** was a cluster of archaeological features in an area measuring approximately 30m by 60m, comprising pits and possible structural features. There were burnt and charcoal fills, but no finds were retrieved to suggest date or function. It was noted that redeposited natural overlying one of the features may conceal further features. This site was later added to the SMR (DU001-026; Excavation – miscellaneous), but is currently being projected with the incorrect co-ordinates (See Section 14.3.2).

Field 8: Thirteen test trenches were proposed for F8, but a 60m exclusion zone in place along the western extent of the field meant that the geophysical features identified centre-west in the field, including a circular enclosure, were not tested. Post-medieval drains and modern linear features were discovered in the eastern side of the field, and a number of ditches may be archaeological, but are most likely related to post-medieval drainage. Three areas of archaeological potential were identified: **Site 8/1** comprised a series of features over a 65m band between Trenches 39 and 49. They may be related and contain predominantly charcoal rich fills; **Site 8/2** comprises two possible pits, 45m apart, in Trenches 51 and 52 in the eastern part of the field; **Site 8/3** is outside of the proposed development site and comprises an isolated pit.

Field 9: Flint debitage and local red pottery were noted in the ploughed topsoil in the 2006 assessment (O'Carroll 2006). Thirteen test trenches were excavated, of which eleven (Trenches 53-59, 150-153) were wholly or partially within the application site boundaries. Numerous stone drains and modern service trenches were identified, as well as several ditches that were thought not to be of archaeological significance. Two archaeological areas were identified: **Site 9/1** is located outside of the proposed development and comprised linear features and a pit, with one of the linears containing a flint blade. A ditch and metallised surface were also identified. This archaeological site was added to the SMR (DU001-

028; Excavation – miscellaneous). The archaeological site suggests the possibility that activity related to the Neolithic house (SMR DU001-014) may extend towards the application site. **Site 9/2** was located in the centre-west of the field, comprising a large irregular pit containing charcoal-rich soil and burnt stone inclusions. It was approximately 75m northwest of site 9/1 and they may be related. The burnt stone inclusions may suggest the presence of a *fulacht fiadh* nearby.

14.3.3.5 Parkway Water Main (Connell 2008; 07E1155)

The route of a proposed water main at Parkway, Balbriggan, which traversed the application site was tested in January 2008 with the aim of assessing the archaeological nature of a number of archaeological features that had been identified in the previous assessment. Twenty test trenches were excavated, of which six (Trenches 1-6) are within the application site in F6, F7 and F9.

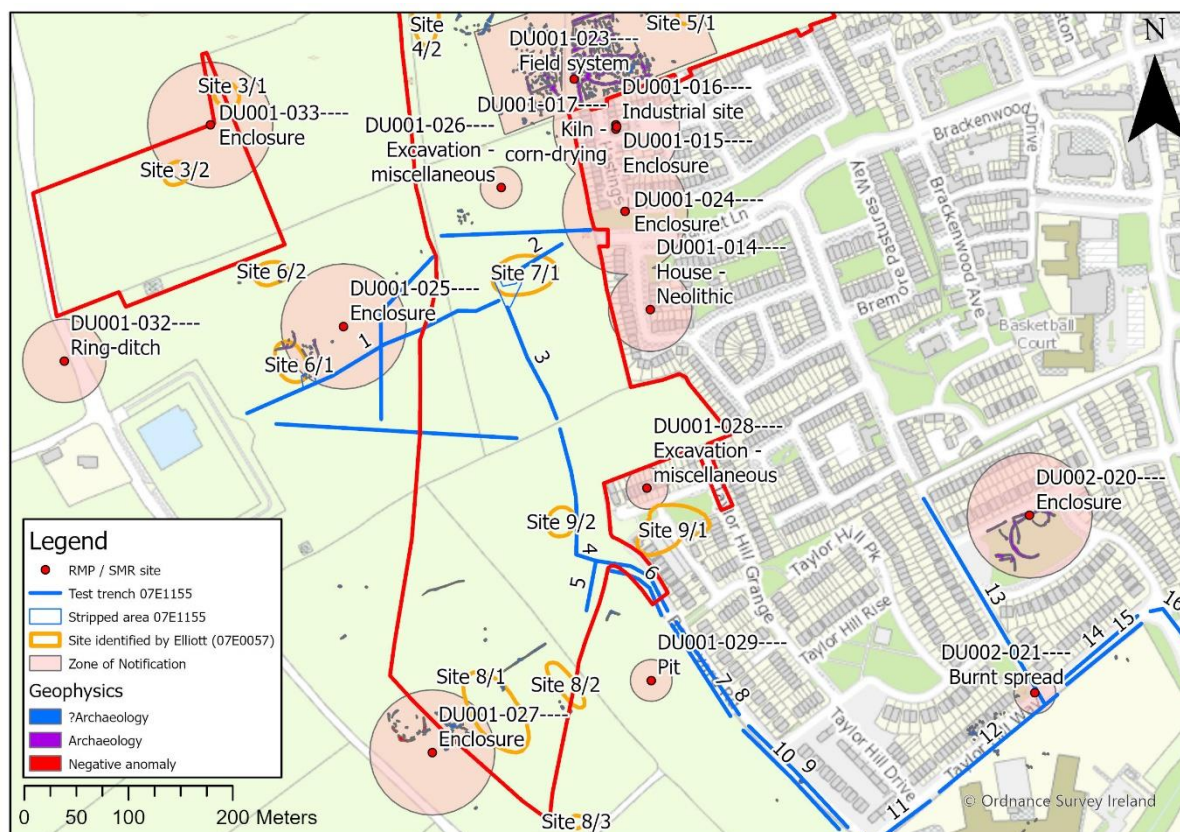


Figure 14.9 Trench layout under Licence 07E1155 with geophysical survey results and sites identified by Elliott (2007)

In addition to the linear test trenches, areas adjoining Trenches 1, 2/3 and 4 were stripped to further investigate Site 6/1, Site 7/1 and Site 9/2 which were identified in Elliott's (2007a; Licence no. 07E0057) phase of testing; this exercise did not reveal features of archaeological nature. Patches of decomposing stone were noted along a stone-filled French land drain in a herring-bone pattern in Trenches 2 and 3, but no archaeological features were revealed in this phase of testing. An additional five trenches were excavated as part of the water scheme in 2012 (O'Hara & O'Connell 2012; Licence no. 07E1155ext) revealing nothing of archaeological significance.

14.3.3.6 Flemington Lane Link Road (Lyttleton 2008a; 08E0528)

A programme of testing was undertaken in Field 1 on the northern end of a proposed ring road where it met with Flemington Lane, north of the holy well (RMP DU001-004). Twelve trenches were excavated, of which five (Trenches 3, 7-9, 10) were within the proposed development site. Medieval features associated with the enclosure to the south were identified, including seven linear features and a curvilinear feature which measured approximately 4m in diameter. Several fragments of medieval

pottery were recovered. A number of post-medieval stone drains were also identified in this area.



Figure 14.10 Trench layout under Licence 08E0528 with geophysical survey results and sites identified by Elliott (2007a)

14.3.3.7 Archaeological Testing (McLoughlin 2021; 21E0298)

Archaeological testing was undertaken a previous SHD application which was not progressed, but the results of which have been instrumental in formulating design and mitigation for this LRD application. The main aim of the testing was to assess the extent of the features located around the fringes of the concentration of features designated in the SMR as field system DU001-023. The testing also aimed to confirm the location of a possible enclosure indicated in geophysical survey (the mislocated SMR DU001-024; see Section 14.3.2) and to test the location of a possible sub-surface enclosure visible on google maps (June 2018) which has recently been added to the record (SMR DU001-033). The full testing report is contained in Appendix 14.4 of the EIAR.

Archaeological testing took place over nine days from the 31st May 2021 and confirmed the presence of substantial archaeological features in trenches T14-T20 inclusive, which corresponded with the concentration of anomalies representing field system DU001-023, as indicated in the geophysical survey (

Figure 14.4). The geophysical survey interpretation was found to have a high degree of accuracy where anomalies were interpreted as definite archaeology (purple on the interpretation drawing). Associated with, but outside of the main concentration, there were less substantial archaeological features present in trenches T10 and T11. While evidence of the possible pits (Anomaly 4) and linear feature (Anomaly 5) identified in the geophysical survey was not found in T10, a shallow gully was of archaeological interest. Possible archaeology in the form of linear features (ditches / gullies) was also 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 (Anomaly 3). T6 which was positioned to investigate a tentative enclosure in the geophysics (Anomaly 2) also revealed no features, finds or

deposits of archaeological interest. The presence of a possible ditched enclosure indicated in aerial photography (DU001-033) was confirmed in trench T1 as a double-ditched enclosure.

No dateable finds were recovered from any of the investigated features, but the field system (SMR DU001-023) most likely dates to the early medieval period (based on a lack of dateable finds and dating of the previously excavated, associated site to the south). Based on form, the double ditched enclosure (SMR DU001-033) could date to the Bronze Age or the early medieval period. As a result of this investigation the site layout was redesigned so that the main concentration of newly revealed archaeological features would be incorporated into a green space and preserved in situ.

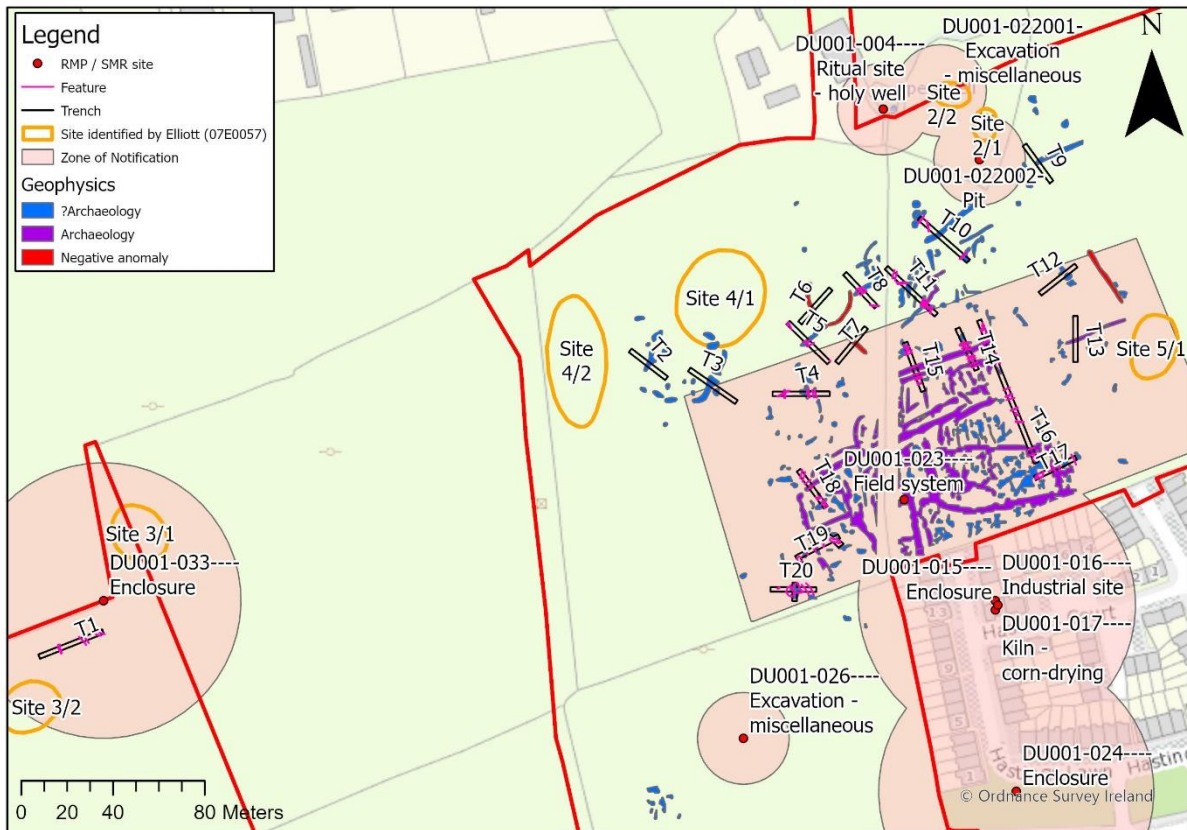


Figure 14.11 Trench layout under Licence 21E0298 with geophysical survey results and sites identified by Elliott (2007a)

14.3.4 Analysis of Aerial Imagery

Aerial imagery taken in recent years demonstrates the level of disturbance in parts of the proposed development site. Aerial imagery from May 2008 shows the course of the Parkway Water Main through the proposed development site (Figure 14.12).

An image captured in June 2018 (Figure 14.13) shows that the majority of the land within the site and in the adjacent fields to the south was still in agricultural use. Field 3 had been subdivided by this time. A palaeochannel is visible in F8 in this imagery.



Figure 14.12 Google Earth Pro aerial image (6/5/2008), showing proposed development site and Parkway Water Main



Figure 14.13 Google Earth Pro aerial image (24/6/2018), showing proposed development site

By July 2019 (Figure 13.14) the Taylor Hill residential development was under construction to the southeast. There was also a haul road running northwards through the fields to a compound / stockpile area and another running east towards Hamlet Lane. A large compound / stockpile area incorporated the eastern part of what was formerly Field 3, as well as part of Field 6. The compound / stockpile area appears to have been topsoil-stripped. This area encroaches upon the ZoN of an enclosure site (SMR DU001-025) that was identified by geophysical survey in 2005 (Nicholls 2005; Licence no. 05R0137) and confirmed by archaeological testing in 2007 (Elliott 2007a; Licence no. 07E0057). An overlay of the geophysical survey results shows that the enclosure site lies outside of the compound area. Another enclosure, identified more recently from aerial imagery (SMR DU001-033) appears to extend into the compound / stockpile area and may have been partly disturbed by the works (Figure 14.3, Figure 14.4).

In imagery dating to February 2021, the extent of the stockpiling had increased and the Taylor Hill had been completed, along with the Boulevard Road (Figure 14.15). More recent aerial photography is not available, but the compound / stockpile area has now been converted to a park with a road linking it to Hamlet Lane.



Figure 13.14 Google Earth Pro aerial image (3/7/2019), showing proposed development site



Figure 14.15 Google Earth Pro aerial image (22/2/2021), showing proposed development site

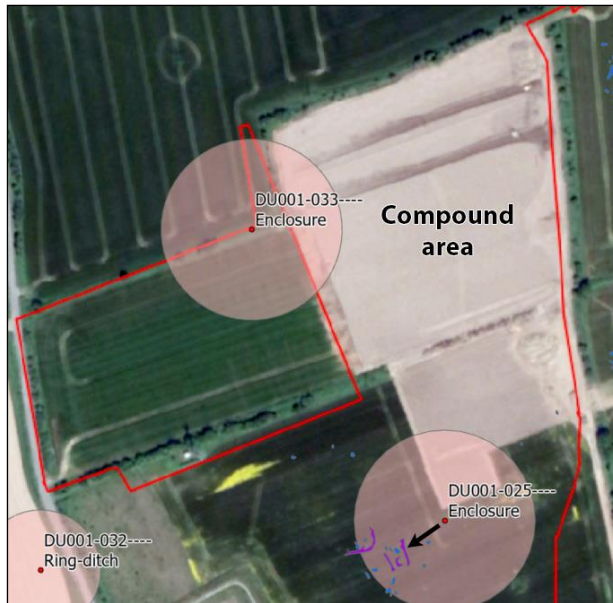


Figure 14.3 Google Earth Pro aerial image (3/7/2019) showing detail of compound / stockpile area and location of recorded archaeological sites



Figure 14.4 Google Earth Pro aerial image (24/6/2018), showing cropmark enclosure DU001-033 at edge of later compound / stockpile area

14.3.5 Cultural Heritage

While some holy wells are related to intangible cultural heritage due to devotions and pattern days etc., there is no known devotion associated with the holy well known as 'Lady Well' adjacent to the proposed development site (RMP DU001-004).

The field boundaries which separate Field 6 from Field 8 and Field 7 from Field 9 also function as the Flemingtown / Clonard or Folkstown Great townland boundary. A short part of the east boundary of Field 9 where it borders the adjacent Bremore Pastures housing development also forms part of this townland boundary. It was noted in the course of fieldwork that the field boundaries in the Clonard / Folkstown Great portion of the proposed development site were more defined than in Flemingtown, with more species present. In Flemingtown, by comparison, the hedgerows were often overgrown with bramble. The townland boundary is a wide hedgerow dominated by gorse.

14.3.6 Placenames

The proposed development site lies within the townlands of Flemingtown, and Clonard or Folkstown Great, in the historic civil parish of Balrothery and the barony of Balrothery East. The townland names of this area are largely dominated by English language-derived names, although there are some names with Irish elements, and in the case of Clonard or Folkstown Great there are both. Names have been largely translated rather than anglicised, indicating the presence of English speakers in the area in the 1830s, when the names were taken down by the Ordnance Survey. Names such as Flemingtown and Folkstown, and the neighbouring townlands of Stephenstown and Tankardstown, preserve personal names of English settlers.

Most of the Irish names describe the topography of the area, although there are also references to other elements of the physical and social landscape. Knock is a simple anglicisation of *cnoc*, a hill. Clogheder is probably derived from *cloch*, a stone, and possibly *eadar*, meaning between. Bremore is thought to be of Gaelic origin coming from *brí mór* meaning great hill. Clonard derives from *cluain ard* meaning high meadow, and is probably the native townland name that preceded the use of Folkstown Great. They appear on Rocque's map of 1760 as 'Clinard' and 'Fowlkes Town' (see below and Figure 14.6).

Balrothery, which is the name of the historic civil parish and barony, as well as a local townland / village name to the southwest of Balbriggan, is derived from *baile an ridire*, the townland of the knight, perhaps an Irish reference to a Norman event, although, as mentioned above in the historical section, it may also be derived from a personal name, Rhodri (c. 1090) son of Owain ap Gruffudd.

14.3.7 Historic Maps

14.3.7.1 Pre-Ordnance Survey Maps

The Down Survey of the 1650s was at the time the most coherent mapping project ever undertaken in the world. The aim was to measure lands forfeited by the Catholic Irish in order to redistribute it to Merchant Adventurers and English soldiers. The barony map of Balruddery (Figure 14.5) shows and names the townlands of 'Fleiningtonne' (Flemingtown) and 'Big Foulkstonne' (Clonard or Folkstown Great), as well as the neighbouring townlands of Cloghruduf' (Clogheder), Bremore and 'Tankardstonne' (Tankardstown). The general location of the proposed development site can be identified on the map, using the depicted townlands, as the boundaries are similar to those represented on the first edition Ordnance Survey mapping of 1843 (discussed below). Bremore castle is shown to the east, with a small village named 'Newhaven' at a harbour to the north of it, which was subsequently abandoned. While Flemington Lane is not shown, the present Bridgefoot Road is at least partially indicated by the dotted line running through Cloghruduf' and 'Big Foulkstonne'. No further detail is provided on the parish map or in the accompanying terrier.

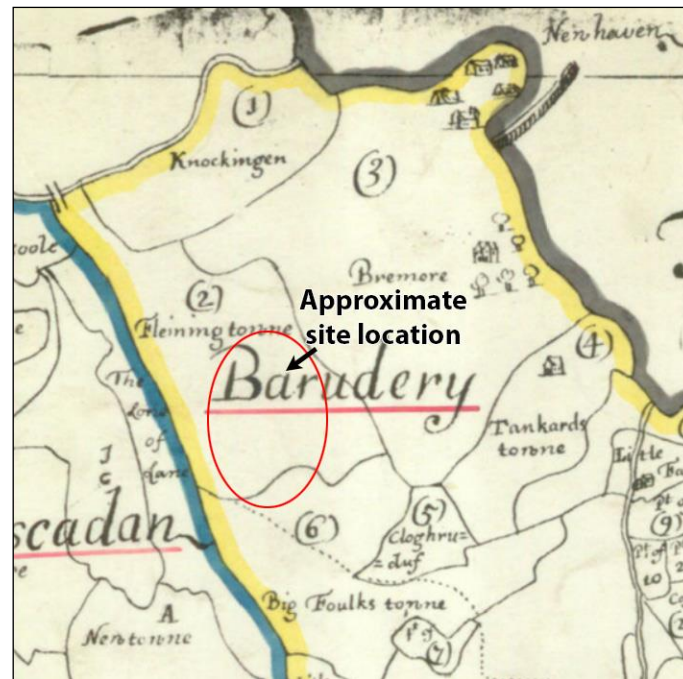


Figure 14.5 Down Survey map of the barony of Balruddery (Balrothery East), c. 1656

Rocque's map of Dublin County (Figure 14.6) was surveyed in 1760 and shows considerably more detail than the Down Survey map. The proposed development site can be approximately located, with Flemington Lane and Bridgefoot Road both depicted, as is the stream that forms the Flemington / Clogheder townland boundary. The fields are shown as a mixture of arable and pasture and the undulating nature of the topography, with knolls and plateaus of higher ground is also indicated. Flemington Lane had a distinct kink at its western end, at a crossroads, with two rows of small cottages set in narrow plots to either side and an area marked 'Commons' to the east. Lady Well (RMP DU001-004), although not named, is depicted at the heart of the settlement, at the crossroads. The remnants of the former settlement may be visible on the First Edition 6-inch OS map (Figure 14.7), which would suggest that one of the fields set out in plots and containing houses between the crossroads and a hill on Rocque's map may be Field 5. This small settlement is named 'Flemming Tn.' on the map. The more substantial village of 'Ballscaddan' can be seen to the northwest, Bremore Castle is depicted to the east, and the village of 'Ballbriggan' clustered around the harbour and quay at the mouth of the River Bracken. A small farmstead and a more substantial house and courtyard are depicted at 'Cloghrudery' (Clogheder) and 'Tankards Town' respectively. The former settlement of New Haven is shown as a small cluster of houses, but the pier is not depicted, its function now served by the harbour at Balbriggan.

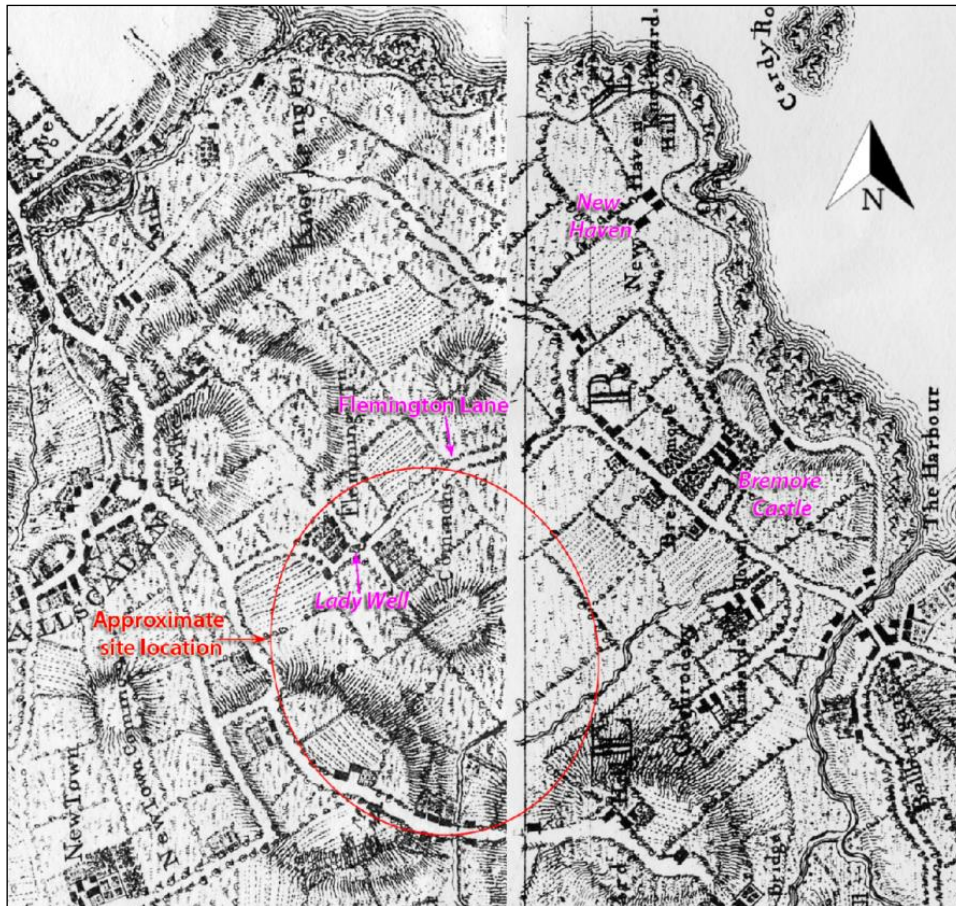


Figure 14.6 Rocque's map of the county of Dublin, 1760

14.3.7.2 Ordnance Survey Maps

The First edition 6-inch to the mile Ordnance Survey (OS) maps are renowned for their accuracy and level of detail, with the sheets of the proposed development site published in 1837 (Figure 14.7). The proposed development site encompasses an area shown as agricultural fields to the northwest of Balbriggan village, which had grown significantly since the time of Rocque's map. In addition to Flemington Lane and Bridgefoot Road, Clonard Road is also depicted by this time, built to connect the new housing extending out from the village on Chapel Street to the pre-existing road network. Flemington Lane had been realigned by this time, now avoiding the former settlement of Fleming Town as depicted on Rocque's map. Little survived of the settlement in 1843, with the exception of the road that formerly extended north of the crossroads and one small cottage and property plot at its southern end. Lady Well is depicted on this map much as it is on Rocque's map, as a small enclosure containing the well which is fed by a stream. A short section of laneway leading west from the well represents the remains of the old route of Flemington Lane. A threshing machine or thresher ('*Thrash.⁹ Machine*') is indicated on the north side of the road. A structure is visible in F1 where it is proposed to construct the Distributor Road. The vernacular farm building (BH1) is also depicted outside of the proposed development.

The structure on the line of the Distributor Road has been removed by the time of the 25-inch OS map in 1908 and revised edition 6-inch map of 1911 (Figure 14.8, Figure 14.9). It had been replaced by an L-shaped structure which has since been altered and roofed with corrugated iron and is designated BH2 in this assessment. The revised edition 6-inch map also shows the advent of electrification in the area with a 38 kv power line running across the fields within the proposed development site.

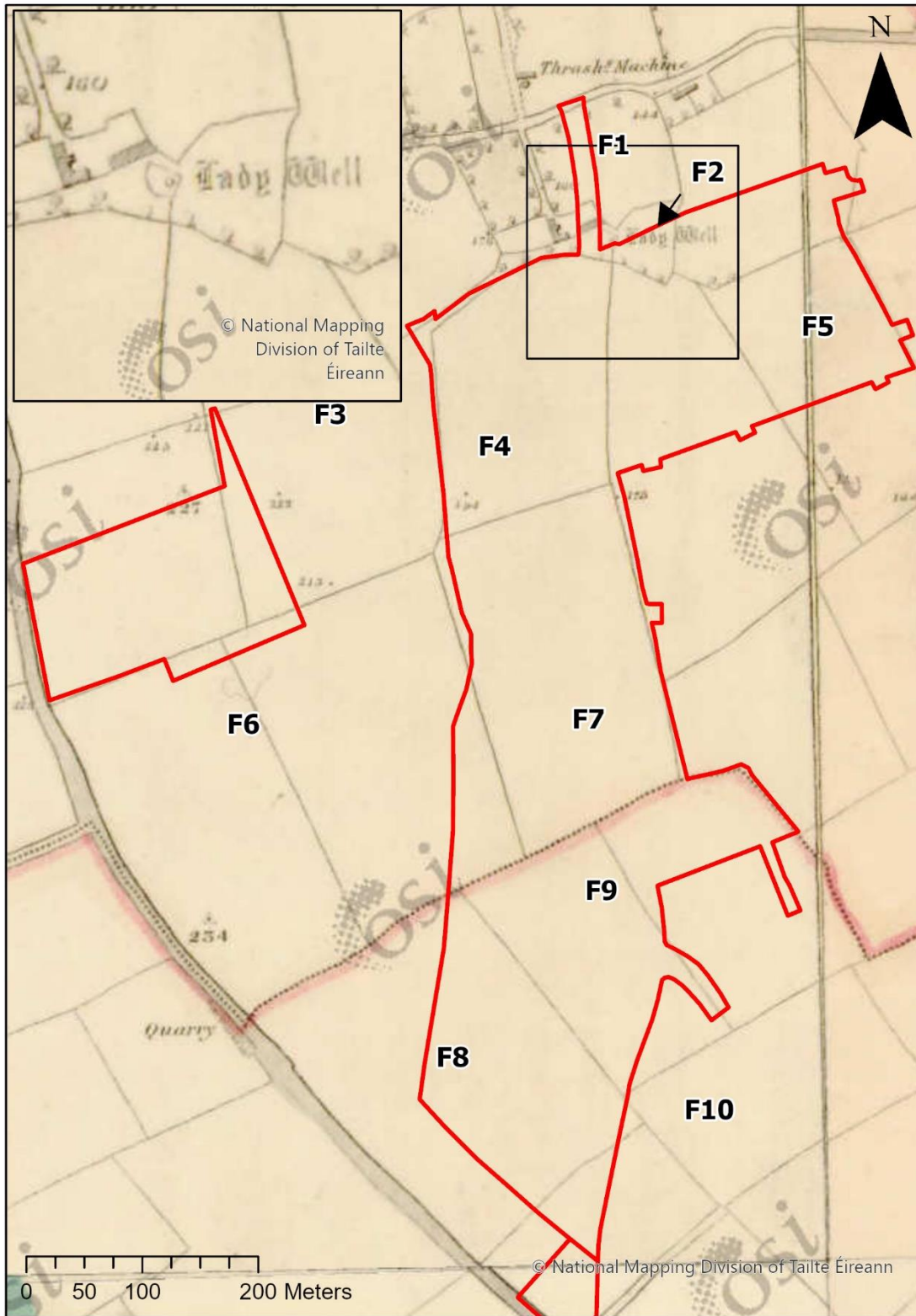


Figure 14.7 First Edition 6-inch OS map (1837), showing proposed development site and Lady Well (RMP DU001-004)

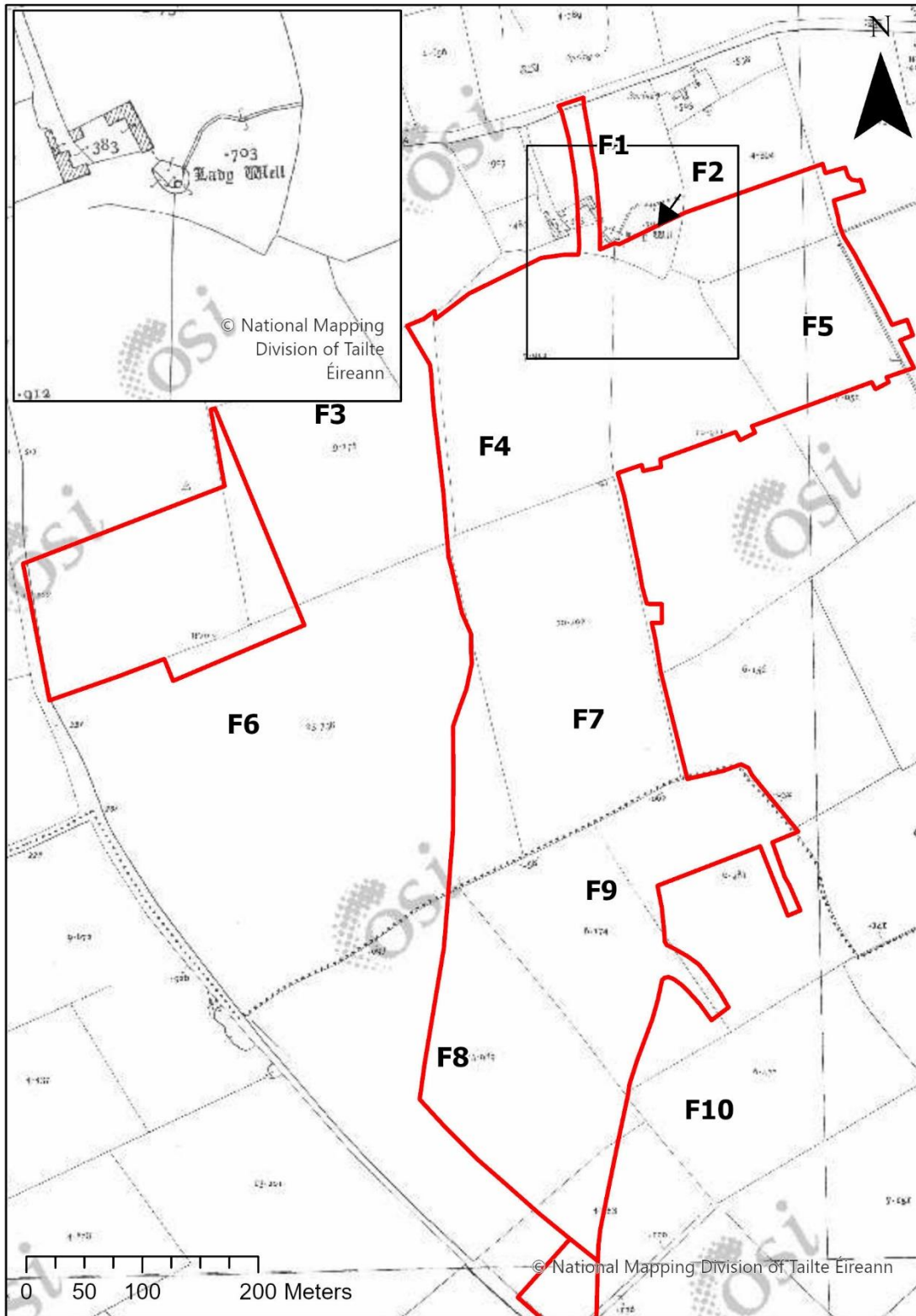


Figure 14.8 Revised edition 25-inch OS map (1908), showing proposed development and Lady Well

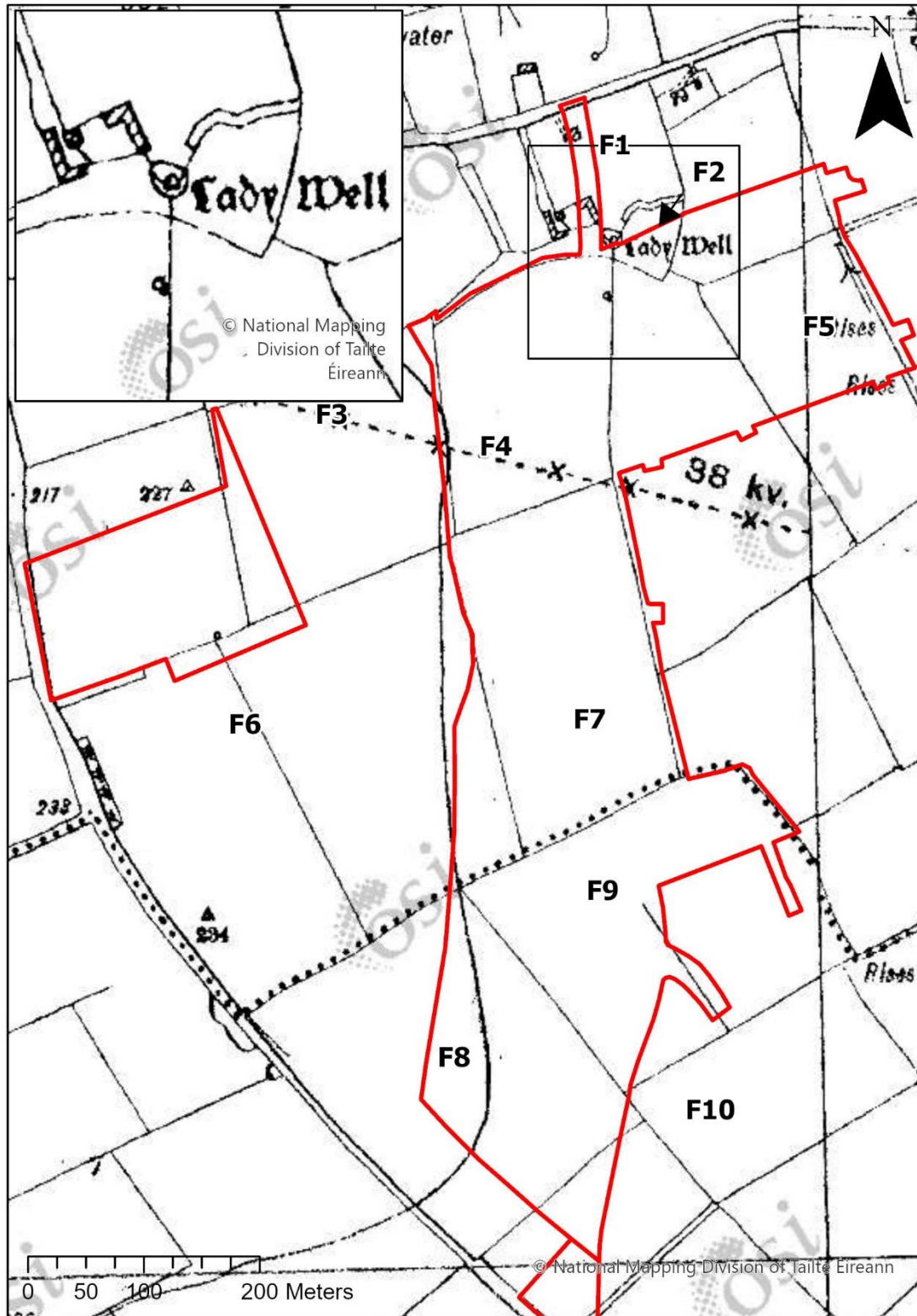


Figure 14.9 Revised edition 6-inch OS map (1911), showing proposed development site

14.3.8 Field Inspection

A field inspection was undertaken on 25th April 2023 in order to provide a baseline record and to ascertain the condition of the lands following previous and ongoing archaeological investigations and nearby construction works. The proposed residential development will include a north / south oriented

Distributor Road that will connect to the existing Boulevard Road to the south-east, which exits onto the R122 road to the south. Boulevard Road was constructed as part of separate developments. The assessment follows the field numbers established by O'Carroll (2005) which can be seen in Figure 14.3.

14.3.8.1 Field 1

The proposed Distributor Road will pass through F1 to access Flemington Lane. The field is bounded by hedgerows and ditches. The southern boundary with F2 is composed of a very wide and deep overgrown ditch which takes the serpentine course of a former watercourse which leads to the holy well (RMP DU001-004). A hollow in the east of the field also has the appearance of a palaeochannel. Elliott's test excavation (2007a; Licence no.: 07E0057) in this field identified a complex of post-medieval drains, while Lyttleton discovered seven linear features and a curvilinear feature, post-medieval stone drains, and several fragments of medieval pottery.

A vernacular farm building (BH1) is located within this field, to the west of the proposed Distributor Road. It is a two-storey structure with random rubble fabric apparent on the south wall, and render applied to the north wall. The corners of the building and window surrounds are of red brick. The roof beams were partially extant, but the corrugated iron roof had collapsed.



A second farm shed (BH2) is located in this field within the redline boundary where it is proposed to construct a Distributor Road. It is a large structure, with the lower walls constructed of stone and the upper portion and roof constructed from corrugated iron. The limestone walls are roughly coursed with narrow slit windows surrounded with red brick. Decorated quoin stones are on the corners of the building. The structure is depicted on the 25-inch map of 1908 and the revised edition 6-inch map of 1911 as an L-shaped building which was evidently later altered to form the present rectangular structure.

The well is a natural spring known as Lady's Well (RMP DU001-004) and is located in the southeast corner of the field but is in very poor condition. O'Carroll (2006) had noted dumped earth surrounding it and green algae and rubbish in the water. In 2019, the well was completely clogged with earth and mud, and with no water visible. In 2021, while there was some water, it appeared along the boundary rather than demarcating a site. There was more water visible in 2023, but wheel ruts were visible indicating recent disturbance. It appears as a hollow of approximately 4m by 5m with an earthen bank circling the south and east of the monument. Some stone in the bank indicate a slight revetting which has fallen away.

The well is located immediately outside of the proposed development site, with the proposed Distributor Road immediately to the west, and the edge of the proposed Public Open Space no. 1 immediately to the south. While the site is quite dilapidated, the bank and tree line form the setting of this site.



Plate 3 Lady Well in 2006 (OCarroll 2006)



Plate 4 Lady Well in 2019



Plate 5 Lady Well in 2021



Plate 6 Lady Well in 2023



Plate 7 Trees on edge of Lady Well and BH2

14.3.8.2 Field 2

F2 is a small round paddock which is raised in the centre. The south and east boundaries of the field are located within the proposed development site, as well as the hedgerow which border the holy well (RMP DU001-004). The ground level is rough underfoot and the hedgerows contain trees and bramble. The watercourse along the north boundary feeds the holy well. Testing in this field revealed two sites, one a dense pit cluster with linear features and curving ditches (Site 2/1; SMR DU001-022001) and the other a pit cluster (Site 2/2; SMR DU001-022002); these sites are located within an open space area within the proposed development (PO1).



Plate 8 F2 facing north. Holy well is directly behind hedgerow at ranging rod

14.3.8.3 Field 3

F3 was formerly a large arable field which has now been divided between the proposed development and a new park. The western portion, which is within the proposed development, is currently planted with rapeseed. The ground rises towards the northwest to form the highest point in the application lands with extensive views of Balbriggan to the southeast, the coastline to the east, and of Fourknocks to the west and Braemore Castle to the northeast. The remaining hedgerow on the north comprises bramble with some trees and gorse. The southern hedgerow is predominantly bramble with a communications tower along the boundary. A narrow segment of the former F3 remains outside the east edge of the park and within the proposed development site. An earthen bank was noted on the field boundary on the northern edge of this segment where slight stone revetting was identified.

Test excavations revealed two sites in this field. Site 3/1 comprised a series of linear and curvilinear features and is partially located within what is now a park. Site 3/2, a large pit with charcoal fills located on the north-eastern edge of the proposed grass pitch.

An enclosure recently identified from aerial photography is located in F3 and has recently been added to the record (SMR DU001-033). It is described as a circular enclosure (ext. diam. c.35.4m) defined to the south by a ditch (wth. c.1.3m) bisected by a later field boundary. The enclosure is most clearly visible in the field to the south (within the Class 1 Open Lands). Other linear and curvilinear cropmarks to the east and west maybe associated with the enclosure. It is likely that sites 3/1 and 3/2 previously revealed through test excavation are related to this now recorded feature. Archaeological testing (McLoughlin 2021; 21E0298) was undertaken to ascertain the nature of this enclosure. Testing uncovered three ditches within T1, which correspond to the enclosure ditches identified on Google maps (June 2018).



Plate 9 Google maps (June 2018) with the location of Test Trench 1 at site DU001-033



Plate 10 F3, view to the northwest, showing boundary and site and enclosure (2021)



Plate 11 F3, facing southwest



Plate 12 Bank on northern boundar of F3

14.3.8.4 Field 4

F4 is a planted with rapeseed. The field boundaries are very straight and comprise very wide hedgerows of overgrown bramble and occasional trees. The northern boundary is composed of dumped earth creating a high overgrown bank, with shipping containers placed to block access from the farmyard on Flemington Lane. The field rises to the west, with an east-west ridge creating high ground in the centre of the field. The ground slopes towards the south and there are extensive views to the north. A tree-lined boundary with a ditch forms the eastern boundary and the western boundary is formed by the boundary treatment of the park.

Previous investigations revealed the western extent of the enclosure and field system (SMR DU001-015 & DU001-023) on the south-eastern extent of this field. The outer periphery of these features were test excavated (T18, 19 and 20) (McLoughlin 2021; Licence no.: 21E0298) to determine their nature and extent. All three test trenches revealed features of archaeological significance including ditches, possible kiln and pits.

A sub-square enclosure (Sites 4/1, 4/2) was previously identified in the northwest of the field. The description of these sites, comprising a series of ditches with an average of 0.30m depth, corresponds with the description of the sub-square enclosure SMR DU001-024 which has been incorrectly located on the webGIS service at www.archaeology.ie (See Section 14.3.2). These features were test excavated (T2 and T3) (McLoughlin 2021; 21E0298). An old test trench with hazard tape at the base was identified at the northwest end of one of the trenches and also detected in the other trench (Elliott 2007a, Trench 10), oriented WNW-ESE, while further to the southeast an irregular anomaly was investigated and found to be a natural variation in the subsoil which appeared to correspond with the anomaly indicated in the geophysical survey. No features, finds or deposits of archaeological interest were identified within the trenches.

A series of other anomalies which were previously identified by geophysical survey were also test excavated (T4, T5, T6, T7 and T8 (ibid.)) in this field. These anomalies proved to be largely non-archaeological in nature although a few linear ditch-type gullies may be of archaeological interest.



Plate 13 Field 4, looking east towards the tree and scrub boundary and the sea



Plate 14 F4, viewed from park



Plate 15 F4, Test Trench 18 showing two pits

14.3.8.5 Field 5

Field 5 is a large field planted with rapeseed. Part of the field extends northwards and outside of the application lands. Nodules of unworked flint and quartz were found on previous site inspections on the surface of the field. The field is bounded on the east and south by existing housing estates. The ground slopes towards the east and the north. At the southwest corner of the field a significant cluster of anomalies was detected from geophysical survey. It is proposed to place an open space (PO4) at this location thereby preserving the archaeological features in situ. Previous excavations revealed a large enclosure (SMR DU001-015) to the south of this field, now a residential development. Testing (McLoughlin 2021; Licence no.: 21E0298) took place to establish the extent of features so the design could incorporate the archaeological findings into the proposed design layout. Archaeological features were detected within T14, T15, T16 and T17. The extent of these test trenches will now be incorporated into a green space where no development will take place. No features of an archaeological interest were detected in T9, T12 and T13, while limited findings were revealed in T10 and T11. The area of concentrated archaeological activity will be avoided by the proposed design layout.



Plate 16 F5, view to the southwest corner where the geophysical anomalies have been detected



Plate 17 F5, testing occurring to determine the extent of subsurface archaeological features (2021)

14.3.8.6 Field 6

Field 6 is a large sub-rectangular ploughed field with young crop which rises towards the northwest. The majority of the lands will function as Class 1 Open Space and a new park and carpark have been constructed over part of this area. A haul road is located along the east side of this field. The south-eastern corner is within the proposed development site. There are extensive views of the sea. The field boundaries are composed of wide hedgerows with some trees and gorse. The southern boundary also functions as the townland boundary between Flemingtown and Clonard / Folkstown Great. It is quite wide, comprising gorse, trees and bramble, with a communications tower towards the west end. Another mast is located on the northern boundary. To the west of the field, the site of the water station is located. Occasional nodules of flint were noted on the ground surface.

Previous investigations identified two archaeological sites within the Field 6. Site 6/1 (SMR DU001-025) comprises a pit cluster with linear and curvilinear features; the fill of features consisted of charcoal rich soil, some with burnt bone inclusions. Site 6/2 was a cluster of three pits (Elliott 2007a; Licence no.: 07E0057). There is no visible trace of these features. DU001-025 is defined in the SMR as an enclosure with the description matching that of Site 6/1 but is incorrectly located on the HEV (See Section 14.3.2). The site as shown on the HEV is located within an area that has been disturbed to create a new park (please see the description of the park area in Section 14.3.8.3). It should be noted, however, that an overlay of the geophysical survey results indicates that the enclosure site lies outside of the compound area (see Figure 14.3 in Section 14.3.4).



Plate 18 F6, facing northwest across portion within proposed development

14.3.8.7 Field 7

northern section of this field has been ploughed and the northern earthen boundary retained. Geophysical survey (Nicholls 2005; Licence no. 05R0137) identified a series of anomalies thought to represent a series of conjoined enclosures with several large pit-type anomalies. Test excavation (Elliott 2007a; Licence no.: 07E0057) confirmed the presence of a cluster of pits and possible structural features within an area 30m x60m under redeposited natural (Site 7/1). Burnt and charcoal fills were predominant. This site was added to the SMR as 'Excavation – miscellaneous', but has been incorrectly located on the HEV (See Section 14.3.2). There is no visible trace of it in the field, but it is located on the south side of the road. The southern boundary acts as the townland boundary between Flemingtown and Clonard / Folkstown Great and appears more like a hedgerow than the overgrown bramble of the northern fields. There is a break in this boundary and it is at this location that the proposed north-south Distributor Road will run through the proposed development.

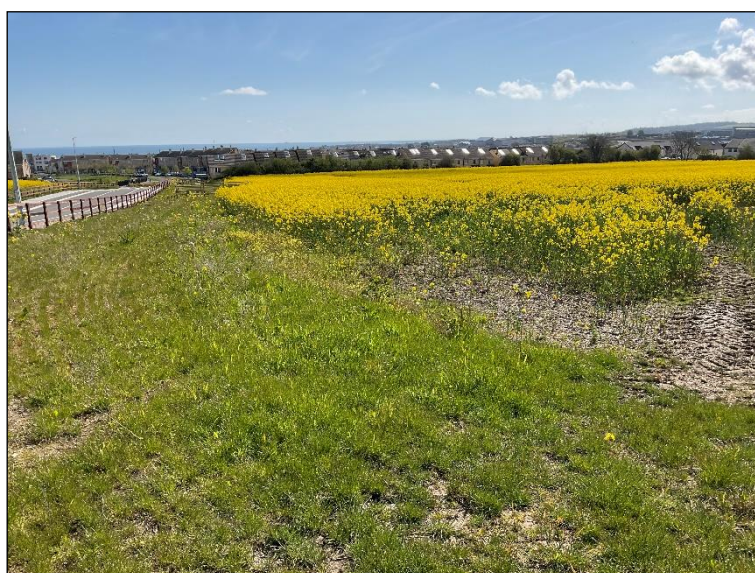


Plate 19 F7, southern section facing east to DU001-026 / Site 7/1

14.3.8.8 Field 8

Field 8 is a large rectangular ploughed field under young crop which is partially within the proposed development site. The lands slope to the south with a distinct ridge on the northern side of the field. Recent aerial photography indicates the presence of a palaeochannel running east-west through the centre of the field, and some patches of lush growth in this area was noted (See Google Earth image in Figure 14.13). This corresponds with the orientation of the palaeochannel which was identified in excavation in adjacent Field 10 (Purcell 2019; Licence no. 18E0238). The hedgerows in this field are more defined than in the Flemingtown fields, with more species evident. There are extensive views to the south and east, and it is the only area where there are views to the north.

A circular enclosure was identified by geophysical survey (Nicholls 2005; Licence no. 05R0137) and subsequently added to the SMR (DU001-027). The feature may be stone in origin and is approximately 30m in diameter. There is no visible trace of the feature and while it is located outside the proposed development area, the geophysical survey revealed adjacent features within the development boundary which may be related to this site.

Previous investigation had revealed two archaeological sites in this field, both of which are located within the residential area. Site 8/1 comprised of a series of features over 65m and Site 8/2 was two possible pits (Elliott 2007a; Licence no.: 07E0057). There is no visible trace of these sites.



Plate 20 F8, facing southeast towards portion within proposed development

14.3.8.9 Field 9

The eastern part of Field 9 has been developed with the Taylor Hill residential development and the proposed development site will incorporate only the north end of this field. Boulevard Road has been constructed to the edge of the site boundary and a haul road continues north from the constructed section through F9 towards what is now a park. The field is planted with rapeseed either side of the haul road.

On the western side the field is defined by wide hedgerows which are more defined than in the Flemingtown fields, with more species evident. Previous investigations in Field 9 revealed Site 9/2 which comprises of a large irregular pit which may suggest a *fulacht fiadh* (Elliott 2007a; Licence no.: 07E0057). This site is likely to have been destroyed by the haul road.



Plate 21 F9, view to the east showing the new residential developments and townland boundary



Plate 22 F9, to the west of the laneway



Plate 23 Trackway splitting F9, facing northwest

14.3.8.10 Park

This area is located outside of the proposed development site within the eastern portion of the former Field 3 and the northeast of the former Field 6. Previous site inspections were undertaken before the development of this area when it was still agricultural land (2019) and when it was in use as a construction compound (2021). The ground level had been reduced within the area and stockpiles of soil and other materials were evident throughout. A park, playing field and car park have now been developed in this area. The ZoN of the enclosure site DU001-025 as shown on the HEV extends into this area, though an overlay of the geophysical survey results would suggest that the HEV location is incorrect and that it lies outside of the park. The site is described as a cluster of pits with linear and curvilinear features (as is previously discussed it is the same site as Site 6/1 (Elliott 2007a; Licence no.: 07E0057). Part of the recently identified cropmark enclosure SMR DU001-033 extended into this area. It was not possible to locate any report of monitoring works taking place in this area.



Plate 24 Stockpile area, view to the north (2021)



Plate 25 Playing pitch within park area

14.3.9 Summary of Cultural Heritage Receptors

The statutory record (RMP / SMR), previous investigations (O'Carroll 2005; Nicholls 2005; Elliott 2007a) and archaeological testing undertaken to inform this report (McLoughlin 2021) have indicated a number of cultural heritage receptors which are considered within this EIAR. A summary of receptors outlined in Figure 14.2 below and they are depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR.

CH ref.	Description
DU001-004 (RMP site)	Holy well known as Lady Well adjacent to PO1 and outside of proposed development. Site inspection in 2023 found the well to appear as a hollow of approximately 4m by 5m containing some water, but much clogged with earth and mud. Wheel ruts indicate recent disturbance. An earthen bank contains the site on the east and south, and some stones were noted which may have formed a slight revetment. Mature trees and hedgerow along the bank create the setting of the monument. A hydrogeologist (See Chapter 7 of this EIAR) concludes that the well is a discharge area for groundwater with some surface recharge via shallow subsoil flows from higher ground to west and southwest. A watercourse which leads to this well on historic mapping forms the boundary with F2.
DU001-015 (SMR site)	An early medieval enclosure which was discovered during pre-development investigations in the Hastings development in 2005 (Bolger 2006a; 2006b; 2009; Licence no.: 05E0663). Bolger concluded that it extended into the proposed development site where the field system (SMR DU001-023) is located within PO4. <i>*This site will be assessed with the field system (SMR DU001-023) as they overlap and cannot be distinguished from each other in the geophysical survey results.</i>
DU001-022001 (SMR site) / Site 2/2	A cluster of pits with charcoal-rich fills and burnt bone inclusions in PO1 which was identified by Elliott (2007a; Licence no.: 07E0057; Site 2/2).
DU001-022002 (SMR site) / Site 2/1	A cluster of pits and a series of possibly curving ditches in PO1 which was identified by Elliott (2007a; Licence no.: 07E0057; Site 2/1) across an area measuring 45m by 50m.
DU001-023 (SMR site)	A field system in PO4 which was identified by geophysical survey (Nicholls 2005; Licence no.: 05R0137) and confirmed with archaeological testing (McLoughlin 2021; Licence no.: 21E0298). This is possibly a continuation of the early medieval activity associated with the enclosure in adjacent lands which was excavated by Bolger (2006; Licence 05E0663) and extends into this area (DU001-015).

CH ref.	Description
DU001-024 (SMR site)	<p>An site recorded as an enclosure in PO5 which is depicted at the incorrect location outside of the proposed development in the Hastings housing estate. Geophysical survey (Nicholls 2005; 05R0137) identified a potential sub-square enclosure, but testing undertaken as part of this EIAR (McLoughlin 2021; Licence no.: 21E0298) did not reveal any archaeological features.</p> <p>The SMR record also refers to ditches identified by Elliott (2007a; Licence no. 07E0057; Site 4/1, 4/2) which were thought at the time to correspond with the potential enclosure. The relevant test trenches and the locations of these discoveries do not correspond with this anomaly. They are therefore discussed as separate receptors.</p>
DU001-025 (SMR site) / Site 6/1	<p>An enclosure outside of the proposed development but within the land ownership boundaries which was detected as a series of conjoined enclosures with several pit-type anomalies by geophysical survey (Nicholls 2005; Licence no.: 05R0137). Test excavation confirmed the presence of a cluster of pits and related linear and curvilinear features (Elliott 2007a; Licence no.: 07E0057; Site 6/1). The site is in the incorrect location on the HEV where the ZoN is depicted extending into the compound area. Consultation of the geophysical results and Elliott's findings show that the site is outside of the compound area. Part of Site 6/1 was stripped by Connell (2008; Licence no. 07E1155) to further investigate the area in the course of the Parkway Water Main investigations but no features of an archaeological nature were identified.</p>
DU001-026 (SMR site) / Site 7/1	<p>A cluster of pits and possible structural features under redeposited natural within an area of 30m x 60m which was identified by Elliott (2007a; Licence no.: 07E0057; Site 7/1). The site is in the incorrect location on the HEV and is located approximately 80m to the south. Part of Site 7/1 was stripped by Connell (2008; Licence no. 07E1155) to further investigate the area in the course of the Parkway Water Main investigations but no features of an archaeological nature were identified.</p>
DU001-027 (SMR site)	<p>An enclosure site of probable stone origin which was detected by geophysical survey outside of the proposed development site. The site is in the incorrect location 35m to the southwest of the geophysical anomaly. A series of potentially archaeological anomalies within the ZoN of the monument extend into the development site and they may be related to the enclosure.</p>
DU001-033 (SMR site)	<p>An enclosure site which is visible as a double-ditched cropmark on Google Earth imagery (24/6/18) and confirmed by archaeological testing (McLoughlin 2021; Licence no.: 21E0298). The enclosure appear to extend into the compound area where the ground level has already been reduced by another developer.</p>
Site 3/1	<p>A series of linear and curvilinear features of archaeological potential identified by Elliott (2007a; Licence no.: 07E0057). The site has been disturbed by the construction compound.</p>
Site 3/2	<p>A large pit with charcoal-rich fills identified by Elliott (2007a; Licence no.: 07E0057) which is partially within the grass pitch area.</p>
Site 4/1	<p>A series of ditches identified by Elliott (2007a; Licence no.: 07E0057) which was thought at the time to represent the sub-square anomaly detected by Nicholls (2005; Licence no.: 05R0137).</p>
Site 4/2	<p>Two ditches and a pit identified by Elliott (2007a; Licence no.: 07E0057) which was thought at the time to represent the sub-square anomaly detected by Nicholls (2005; Licence no.: 05R0137).</p>
Site 5/1	<p>Linear and curvilinear features identified by Elliott (2007a; Licence no.: 07E0057). They may represent peripheral features associated with the main cluster of activity in the field system (DU001-023).</p>
Site 8/1	<p>A widely dispersed area of features with burnt and charcoal fills identified by Elliott (2007a; Licence no.: 07E0057).</p>
Site 9/2	<p>A large pit identified by Elliott (2007a; Licence no.: 07E0057). Part of Site 9/2 was stripped by Connell (2008; Licence no. 07E1155) to further investigate the area in the course of the Parkway Water Main investigations but no features of an archaeological nature were identified.</p>
Test trenches 4, 5, 6 & 8	<p>Ditch-/gully-type features were identified by McLoughlin (2021; Licence no.: 21E0298) in these test trenches which were located within the proposed Distributor Road. They may represent peripheral features associated with the main cluster of activity in the field system (DU001-023).</p>
Test trenches 10 & 11	<p>One shallow gully-type feature was identified in T10 and five gully-/ditch-type features were identified in T11 which are of archaeological interest. Geophysical survey also detected a number of gully-/ditch-type anomalies. They may represent peripheral features associated with the main cluster of activity in the field system (DU001-023).</p>
BH1	<p>A two-storey stone-built vernacular farm building which is located in F1 to the west of the proposed Distributor Road. The walls are of uncoursed random rubble, with render on the north wall and red brick details on the corners and window openings. The roof has collapsed.</p>

CH ref.	Description
BH2	A large farm shed within the proposed course of the Distributor Road in F1. The lower portions are constructed of roughly coursed limestone with large dressed quoin stones on the corners and narrow slit windows surrounded by red brick. The upper portion and roof are composed of corrugated iron. The structure is an altered version of an L-shaped building which appears in historic mapping dating to 1908.
Townland boundaries	The field boundaries which separate Field 6 from Field 8 and Field 7 from Field 9 also function as the Flemingtown / Clonard or Folkstown Great townland boundary. A short part of the east boundary of Field 9 where it borders the adjacent Bremore Pastures housing development also forms part of this townland boundary. Field boundaries in the Clonard / Folkstown Great portion of the proposed development site were more defined than in Flemingtown, with more species present. In Flemingtown, by comparison, the hedgerows were often overgrown with bramble. The townland boundary is a wide hedgerow dominated by gorse.

Table 14.3 Cultural Heritage Receptors

14.4 Characteristics of the Proposed Development

The proposed development will consist of the following:

- (i) *The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*
- (ii) *The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35 no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:*
 - (a) *Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).*
 - (b) *Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.*
 - (c) *Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached*

houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes) and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).

- (d) *Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8 no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.*
- (e) *Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments (6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.*

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) *the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).*
- (iv) *the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.*
- (v) *the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.*
- (vi) *a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.*

14.5 Potential Impact of the Proposed Development

14.5.1 Construction Phase

Construction activities which are likely to cause an effect include excavation and ground reducing works which will be required for the preparation of foundations, road construction, landscaping, drainage, substations etc. as set out in Chapter 6 of this EIAR. The assessment methodology is set out in Appendix 14.2 of this EIAR.

The holy well (RMP DU001-004) is located immediately adjacent to the site boundaries. It has been confirmed by a hydrogeologist that the water source will not be impacted by construction activities. The holy well is outside of the proposed development site, and therefore any potential impact would comprise accidental impact from traffic, demolition of the shed or other construction related activity which will be mitigated against. Although the setting of this monument is already much degraded, works associated with boundary treatments also has the potential to negatively impact the setting. This RMP site is afforded a Medium significance / sensitivity value and the magnitude of effect from the construction phase is Low. Therefore the predicted effect is Negative, Slight, Temporary.

The pits and ditches in Field 2 (SMR DU001-022001/002; Site 2/1, 2/2) are located within a public open space (PO2). SUDS and landscaping in this area will impact these subsurface features and require their removal. These SMR sites are afforded a Medium significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Moderate, Permanent.

Much of F4 and F5 comprises an archaeological sensitive area centred on a field system (SMR DU001-023) which was identified by geophysical survey and is likely related to the early medieval enclosure (SMR DU001-015) that was partially excavated in adjacent lands and which extends into the area of the field system. The main concentration of these features will be preserved within a public open space (PO4) where consultation with the landscape architect has taken place to ensure the subsurface features will be protected beneath the landscaping (See Section 14.7.1.2). The impact from the proposed Distributor Road to peripheral features on the southwest of this complex cannot be avoided. Similarly geophysical survey detected peripheral anomalies to the north of the main concentration which will be impacted by the proposed development. Potential impacts from the construction phase may also include accidental impact from traffic or other construction related activity which will be mitigated against. These SMR sites are afforded a Medium significance / sensitivity value and the magnitude of effect from the construction phase is Low. Therefore the predicted effect is Negative, Slight, Permanent.

It has been established by archaeological testing (McLoughlin 2021; Licence no.: 21E0298) that the sub-square anomaly identified by geophysical survey (Nicholls 2005; Licence no.: 05R0137) is not archaeological. This site had been added to the SMR (DU001-024), albeit in the incorrect location in the adjacent Hastings housing estate. Because of this, the significance / sensitivity value of this SMR site has been downgraded to Low and the magnitude of effect from the construction phase is Low. Therefore the predicted effect is Negative, Slight, Permanent.

The enclosure in Field 6 (SMR DU001-025; Site 6/1) is outside of the proposed development site and outside of the compound area. There will therefore be no effect on the SMR site from the construction phase.

The pits and possible structural features in Field 7 (SMR DU001-026; Site 7/1) are in the incorrect location on the HEV. Part of this area was stripped by Connell (2008; Licence no.: 07E1155) and did not reveal any archaeological features, which suggests the site is small scale and ephemeral. The site extends across the proposed Distributor Road and proposed residential buildings which will require the removal of these features. This SMR site is afforded a Medium significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Moderate, Permanent.

The enclosure in Field 8 (SMR DU001-027) is outside of the proposed development site and while the enclosure itself will not be impacted, geophysical survey revealed adjacent features which are within the development boundaries and within the ZoN of the monument. It is therefore possible that the

proposed development will have an impact on features associated with the monument. This SMR site is afforded a Medium significance / sensitivity value and the magnitude of effect from the construction phase is Low. Therefore the predicted effect is Negative, Slight, Permanent.

The double-ditched enclosure which was identified as a cropmark and confirmed through test excavation (SMR DU001-033; McLoughlin 2021; Licence no.: 21E0298) is within the proposed development site, but redesign has been undertaken to move a grass pitch to avoid the monument, ensuring it will be preserved in-situ. Potential impacts from the construction phase are limited to accidental impact from traffic or other construction related activity which will be mitigated against. This SMR site is afforded a Medium significance / sensitivity value and the magnitude of effect from the construction phase is Negligible. Therefore the predicted effect is Negative, Imperceptible, Permanent.

The remaining sites which were identified by Elliott (2007a; Licence no.: 07E0057) are dispersed and ephemeral and have consequently been afforded a significance / sensitivity value of Low.

Site 3/1 (linear and curvilinear features) in Field 3 has already been disturbed by the adjacent construction compound and it is unknown what, if any, of this feature survives. This undesignated site is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Low. Therefore the predicted effect is Negative, Slight, Permanent.

Site 3/2 (pit) in Field 3 is partially located within the proposed grass pitch. This undesignated site is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

Sites 4/1 and 4/2 (ditches and pit) in Field 4 were thought by Elliott (2007a; Licence no.: 07E0057) to have been part of a sub-square anomaly which was added to the SMR as an enclosure (DU001-024) and which was later established by McLoughlin (2021; Licence no.: 21E0298). Sites 4/1 and 4/2 are not in the same location as this anomaly and they therefore appear to be more of the dispersed features which have been identified throughout the proposed development area. They will be impacted by residential buildings. These undesignated sites are afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

Site 5/1 (linear and curvilinear features) in Field 5 will be impacted by residential buildings. This undesignated site is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

Site 8/1 (dispersed area of features) in Field 8 will be impacted by residential buildings. This undesignated site is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

Site 8/2 (possible pits) will be impacted by the proposed Distributor Road and residential buildings. This undesignated site is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

Site 9/2 appears to have been destroyed by the haul road, but some features may survive. This undesignated site is afforded a negligible significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Imperceptible, Permanent.

It is not clear if ditch-/gully-type features identified by McLoughlin (2021; Licence no.: 21E0298) in Test Trenches 4, 5, 6 and 8 are archaeological in nature. The significance / sensitivity value of this area is therefore Unknown, which would lead to an Indeterminable effect. It is likely that if they are archaeological, they are features peripheral to the main concentration of the field system (DU001-023). They would be impacted by the proposed Distributor Road. In this case they would be afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase would be Medium. Therefore the predicted effect would be Negative, Slight, Permanent.

Gully-/Ditch-type features identified by McLoughlin (2021; Licence no.: 21E0298) may be peripheral features associated with the field system (DU001-023). They will be impacted by the proposed creche, access roads and buildings. These undesignated features are afforded a Low significance / sensitivity

value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

The vernacular farm building (BH1) is outside of the proposed development site and will not be impacted.

The farm shed (BH2) will have to be demolished to make way for the proposed Distributor Road. This undesignated late 19th / early 20th century feature is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is High. Therefore the predicted effect is Negative, Moderate, Permanent.

The hedgerows which mark the townland boundaries will have to be removed within the proposed development site. This undesignated feature is afforded a Low significance / sensitivity value and the magnitude of effect from the construction phase is Medium. Therefore the predicted effect is Negative, Slight, Permanent.

The pre-mitigation impacts to cultural heritage receptors from the construction phase of the proposed development are set out in Table 14.4 below. Mitigation will be carried out in advance of construction in order to ameliorate the below effects.

CH ref.	Significance / Sensitivity value	Magnitude of Effect	Quality of Effect	Significance of Effect	Duration
DU001-004 (RMP site); Holy well	Medium	Low	Negative	Slight	Temporary
DU001-022001 (SMR site) / Site 2/2; Pits	Medium	Medium	Negative	Moderate	Permanent
DU001-022002 (SMR site) / Site 2/1; Pits and ditches	Medium	Medium	Negative	Moderate	Permanent
DU001-023 & DU001-015 (SMR sites); Field system & enclosure	Medium	Low	Negative	Slight	Permanent
DU001-024 (SMR site); Enclosure (no archaeological features identified in testing)	Low	Low	Negative	Slight	Permanent
DU001-025 (SMR site) / Site 6/1; Enclosure	Medium	No impact	N/A	N/A	N/A
DU001-026 (SMR site) / Site 7/1; Pits and possible structural features	Medium	Medium	Negative	Moderate	Permanent
DU001-027 (SMR site); Enclosure	Medium	Low	Negative	Slight	Permanent
DU001-033 (SMR site); Enclosure	Medium	Negligible	Negative	Imperceptible	Permanent
Site 3/1; Linear and curvilinear features	Low	Low	Negative	Slight	Permanent
Site 3/2; Pit	Low	Medium	Negative	Slight	Permanent
Site 4/1; Ditches	Low	Medium	Negative	Slight	Permanent
Site 4/2; Ditches and pit	Low	Medium	Negative	Slight	Permanent
Site 5/1; Linear and curvilinear features	Low	Medium	Negative	Slight	Permanent
Site 8/1; Dispersed features with burnt and charcoal fills	Low	Medium	Negative	Slight	Permanent
Site 9/2; Pit	Negligible	Medium	Negative	Imperceptible	Permanent
Test trenches 4, 5, 6 & 8; Ditch-/gully-type features	Unknown	Medium	Negative	Indeterminable	Permanent
Test trenches 10 & 11; Ditch-/gully-type features	Low	Medium	Negative	Slight	Permanent

CH ref.	Significance / Sensitivity value	Magnitude of Effect	Quality of Effect	Significance of Effect	Duration
BH1; Vernacular farm building	Low	No impact	N/A	N/A	N/A
BH2; Farm shed	Low	High	Negative	Moderate	Permanent
Townland boundaries	Low	Medium	Negative	Slight	Permanent

Table 14.4 Construction phase effects to cultural heritage receptors - pre-mitigation

14.5.2 Operational Phase

Mitigation measures for all subsurface archaeological features will be undertaken in advance of the construction phase, comprising either preservation in-situ or preservation by record. As such, there will be no impacts from the operational phase on the majority of the subsurface archaeological features as they will have been excavated prior to this phase.

The holy well (RMP DU001-004) is located immediately outside of the proposed development and is currently in a very dilapidated condition. It is proposed to create a public open space adjacent to this feature (PO1) and the landscaping will include a reflective area. This has the potential to enhance the setting of this monument, while maintaining the mature trees and hedgerows which form the setting of this monument, leading to a positive effect (See Chapter 15 of this EIAR). This RMP site is afforded a Medium significance / sensitivity value and the magnitude of effect from the operational phase is Low. Therefore the predicted effect is Positive, Slight, Permanent.

The main concentration of the field system (DU001-023) and enclosure (DU001-015) will be preserved in-situ within a public open space (PO4). Landscaping of this area will avoid impact on subsurface archaeological features (See Section 14.7.1.2 and Chapter 14 of this EIAR). Signage describing the archaeological remains will enhance the public amenity of the site, leading to a positive effect. This SMR site is afforded a Medium significance / sensitivity value and the magnitude of effect from the operational phase is Low. Therefore the predicted effect is Positive, Slight, Permanent.

The double-ditched enclosure (DU001-033) will be preserved in-situ. Signage describing the archaeological remains will enhance the public amenity of the site, leading to a positive effect. This SMR site is afforded a Medium significance / sensitivity value and the magnitude of effect from the operational phase is Low. Therefore the predicted effect is Positive, Slight, Permanent.

The impacts to cultural heritage receptors from the operational phase of the proposed development are set out in Table 14.5 below.

CH ref.	Significance / Sensitivity value	Magnitude of Effect	Quality of Effect	Significance of Effect	Duration
DU001-004 (RMP site); Holy well	Medium	Low	Positive	Slight	Permanent
DU001-023 & DU001-015 (SMR sites); Field system & enclosure	Medium	Low	Positive	Slight	Permanent
DU001-033 (SMR site); Enclosure	Medium	Low	Positive	Slight	Permanent

Table 14.5 Operational phase effects to cultural heritage receptors

14.6 Do-Nothing Approach

In the “do-nothing” approach the proposed site would not be redeveloped and therefore there would be no adverse impacts to any as yet undiscovered subsurface archaeological deposits, features or finds.

14.7 Remedial or Reduction Measures: Mitigation

14.7.1 Construction Phase

14.7.1.1 General

All surviving archaeological areas which have been identified within this EIAR chapter and depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR will be protected from construction activities with the provision of fencing and signage. These areas will not be used for compounds, storage of material or spoil, or any other construction related activity which could impact the below-ground remains. They will be integrated into completed conservation plans.

It should be noted, however, that Site 3/1 (linear and curvilinear features) extends outside of the proposed development site to what is now a park, and has consequently already been disturbed. Similarly, Site 9/2 has been disturbed by the haul road from Boulevard Road.

Although the holy well (RMP DU001-004) is outside of the proposed development, it occupies a narrow space between the proposed Distributor Road and PO1. Robust fencing (post and wire) and signage will be required in this location to protect it from demolition activities and construction traffic.

The construction programme will allow sufficient time for excavation of sites and features which cannot be avoided.

14.7.1.2 Preservation in-situ

The proposed development site has been designed to facilitate preservation in-situ of the field system (SMR DU001-023) and enclosure (SMR DU001-015) beneath a public open space (PO4). The main concentration of features of this complex will be preserved with a buffer zone of 10-20m extending from the edge of the archaeology. Consultation with the design team has taken place to develop a methodology for the landscaping of this park which will not impact the subsurface features (See Chapter 15 of this EIAR). Archaeological features will be protected with the use of geotextile over the existing ground surface, with made ground across the area and low mounding for tree planting. Any works in this area will be under archaeological supervision (See Section 14.7.1.5). Signage describing the archaeological remains will also enhance the public amenity.

The impact from the proposed Distributor Road to peripheral features on the southwest corner of this complex cannot be avoided. Similarly, geophysical survey detected peripheral anomalies to the north of the main concentration. These areas will be preserved by record (See Section 14.7.1.3).

The proposed development site has been redesigned to move the grass pitch which will facilitate preservation in-situ of the double-ditched enclosure (SMR DU001-033). The site will be preserved under geotextile in a green space with a buffer zone of 10m from the outer edge of the monument. Signage describing the archaeological remains will enhance the public amenity.

14.7.1.3 Preservation by Record

Excavation (preservation by record) will take place for all subsurface archaeological features which cannot be avoided by the proposed development, as depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR. This includes the southwest periphery of the field system (SMR DU001-023) where impact from the proposed Distributor Road cannot be avoided, and an area to the north of the main concentration where Test Trenches 10 and 11 and the geophysical survey results suggest further peripheral features are located.

It is also proposed to excavate two SMR sites (DU001-022001, Pits; DU001-022002, ditches) which will be impacted by the development.

The SMR record DU001-026 (Excavation – miscellaneous) is actually Elliott's Site 7/1 which comprises pits and possible structural features. It appears to have been a small scale site as Connell (2008; Licence no.: 08E1155) did not identify any features on stripping part of the site. The entirety of the site will be stripped and excavated, which will allow a fuller understanding of the nature of the site.

All other sites are dispersed and ephemeral comprising pits and ditch-/gully-type features (Site 3/2, Site 4/1, Site 4/2, Site 5/1, Site 8/1, Site 8/2). They are depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR and will be similarly excavated in advance of development.

All excavations will be carried out under licence from the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH).

Written and photographic records will be made of the townland boundaries and of the farm shed (BH2) prior to any construction or demolition works.

14.7.1.4 Further Investigation

There are two areas which merit further investigations to determine a suitable mitigation strategy as depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR. These comprise the ditch-/gully-type features which were identified in Test Trenches 4, 5, 6 and 8 by McLoughlin (2021; Licence no.: 21E0298), and an area of geophysical anomalies which were detected by Nicholls (2005; Licence no.: 05R0137) within the ZoN of an enclosure (SMR DU001-027).

These areas will be topsoil stripped under archaeological supervision and under licence from the DHLGH. This will determine the nature and extent of any potentially archaeological features. If they are established to be archaeological, they will be appropriately excavated or preserved by record under licence from the DHLGH.

14.7.1.5 Archaeological Monitoring

Archaeological monitoring of all topsoil stripping will be undertaken across the development, and under licence from the DHLGH. This will include the vicinities of Sites 3/1 and 9/2 which have been partly or wholly destroyed by previous construction-related activities. Given the quantity of sites identified through testing of this area, it is likely that archaeological monitoring will reveal further dispersed and small scale sites and / or features which have not been detected through previous investigations. Programming will allow for appropriate monitoring and any subsequent mitigation required. This could be in the form of preservation in-situ or full archaeological excavation (preservation by record).

Although they will be preserved in-situ, works will be required to lay geotextile and create made ground at the field system and enclosure (SMR DU001-023, DU001-015) and the double-ditched enclosure (SMR DU001-033). Works will also take place adjacent to the holy well (RMP DU001-004). All works in these areas will be subject to archaeological monitoring.

All recommendations in this chapter are subject to approval of the National Monuments Service of the DHLGH and the National Museum of Ireland.

14.7.2 Operational Phase

14.7.2.1 Archaeological Mitigation

All archaeological heritage issues will be resolved by mitigation during the early construction or construction phase, in advance of the operational phase, through one or more of the following:

- Preservation by record (archaeological excavation);
- Preservation in situ;

- Preservation by design; and
- Archaeological monitoring.

Where preservation in situ is proposed, ie preservation by design where the subsurface archaeological remains are protected by a geotextile layer and buried within a green/ landscaped area on site. This activity will take place under archaeological supervision. These areas will require ongoing maintenance and oversight by an archaeologist to ensure that no inadvertent damage occurs to the in-situ protected archaeological features. This is where signage is useful to alert people to the location and nature of in situ remains so they are fully understood and no inappropriate activity take place in the future. Consultation with the Heritage Officer for Fingal will provide advice as to the necessary archaeological measures required if these areas have to be disturbed/ excavated in the future.

14.7.2.2 Re-use of Stone

It is recommended that the stone from the demolition of the farm shed (BH2), which includes dressed quoin stones, be re-used within the development. This use of local material with a cultural heritage interest will enhance the public realm for the proposed development.

14.8 Predicted Impact of the Proposal

Archaeological features that have been preserved in-situ have been integrated into the design to protect the remains. Ongoing management strategies will ensure that no unintentional damage is caused by unrelated construction/ excavation/ change of use/ additional landscaping activities. The Heritage Officer from Fingal County Council should be contacted in advance of any activity taking place for advice where archaeological remains have been preserved in situ within the residential development.

The proposed development site has been designed to facilitate preservation in-situ of the field system (SMR DU001-023), enclosure (SMR DU001-015) and a double-ditched enclosure (SMR DU001-033). It is predicted that as the design has been developed to protect the sites within landscaped areas of the development and are designated archaeological features, the probability of any inadvertent damage taking place during the operational stage of the development is low, therefore their continued preservation can be maintained and is secure. Signage in the form of information panels will enhance the knowledge of the below ground remains during the operational stage of the residential development.

Where mitigation comprises preservation by record, this will remove any in-situ remains and features of cultural heritage significance. These sites will no longer be present during the operational phase and there will therefore be no impact. Preservation by record will ultimately add to the available information on the sites and complete the archive.

CH ref.	Quality of Effect	Significance of Effect	Duration
DU001-004 (RMP site); Holy well	Positive	Slight	Permanent
DU001-023 & DU01-015 (SMR sites); Field system & enclosure	Positive	Slight	Permanent
DU001-033 (SMR site); Enclosure	Positive	Slight	Permanent

Table 14.6 Predicted impacts to cultural heritage receptors - post-mitigation

14.9 Monitoring

There will be no requirement for monitoring post-construction.

14.10 Reinstatement

There will be no requirement for reinstatement.

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15.0 LANDSCAPE AND VISUAL AMENITY

15.1 Introduction

15.1.1 Scope

This chapter assesses landscape and visual impacts associated with the proposed mixed-use development (hereafter referred to as proposed development) on 22.473 hectares / 55.53 acres of land (the Application Site) off Flemington Lane, Balbriggan in Co. Dublin (the “Application Site”). A detailed description of the proposed development can be found in Chapter 3 of the EIAR.

15.1.2 Statement of Authority

The Landscape and Visual Impact Assessment (LVIA) has been prepared by Park Hood Chartered Landscape Architects. Park Hood is a Member of the Irish Landscape Institute and Landscape Institute UK with extensive experience in preparation of Landscape / Townscape and Visual Impact Assessments for large scale projects throughout Ireland and the UK.

The primary author is Andrew Bunbury BA DipLA CMLI. Director at Park Hood, who is a fully qualified Landscape Architect and Chartered Member of the Landscape Institute with over 25 years’ consultancy experience in the profession across Ireland and the UK. He works between the Dublin, London and Belfast offices of Park Hood where there are 25 members of staff including a further ten 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 ISO 14001:2015 and ISO 9001:2015.

15.1.3 Supporting Documents and Appendices

This Chapter is supported with Appendices as follows: -

- *Appendix 15A: Tree Survey (Charles McCorkell Arboricultural Consultancy 2022)*
- *Appendix 15B: LVIA Visualisations and Photomontages (3D Design Bureau)*

15.2 Research Methodology

15.2.1 Guidance

The overall approach and methodology undertaken within this LVIA are based on the *Guidelines for Landscape and Visual Impact Assessment (3rd Edition)* by *The Landscape Institute and the Institute of Environmental Assessment (2013)* (GLVIA). There are a number of published guidance documents including Development Plans, which include planning designations relevant to the Study Area as listed below:-

- *The National Planning Framework - Ireland 2040;*
- *National Spatial Strategy for Ireland 2002 – 2020;*
- *Fingal Development Plan 2023-2029 (FDP);*
- *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).*

Other sources of information include:

- *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>

The baseline assessment included study of Ordnance Survey Ireland historical and recent mapping to assess the Flemington and Balbriggan area has developed since the 19th century as well as assess approximate calculations of relevant distances or areas.

15.2.2 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 this proposal. 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 TVIA methodology can be summarised as undertaking the following key tasks:-

- Site Visits between August and October 2021;
- Assessing the baseline Landscape and Townscape Setting and Conditions;
- Evaluation of key components of the proposed development based on site layouts, plans and elevations;
- Consideration of Mitigation and Enhancement Measures including those shown on the landscape plans and proposals as set out on plans and drawings by IS Design;
- Assessment of Landscape and Landscape Effects;
- Assessment of Visual Effects; and
- Summary of Significance of Landscape and Visual Amenity Effects.

15.2.3 Definition of Landscape and Visual Effects

For the purpose of this assessment, this chapter adopts the definition of landscape presented in the European Landscape Convention and as such, the term 'landscape' refers equally to areas of rural countryside and urban – built up – areas (typically historically referred to as 'townscape') which are clearly part of the Balbriggan study area for this proposal. 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

associated townscape and landscapes. The 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 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)

15.2.4 Photomontages and Visualisations

To support the visual assessment, photomontages, wirelines and graphics have been prepared from 10 no. representative viewpoints by 3D Design Bureau to allow assessment of its potential scale and nature in these views and these are contained in Appendix 14B. The viewpoint selection process and photomontage methodology is based on *Landscape Institute Technical Guidance Note 06/19: 'Visual Representation of Development Proposals (2019)*.

15.2.5 Study Area

The study area includes the Application Site itself and 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 in Ireland.

15.2.6 Consultation

A meeting was held on 26th January 2023 and the Council requested further information regarding communal areas of open space for apartments, cross sections of public open space, play facilities and trees. A response to these issues can be found within the Statement of Response to FCC Pre-Application Consultation Opinion.

15.2.7 LVIA Criteria

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 this proposal. It is based on the interpretation of the physical and aesthetic characteristics following criteria and terminology described in the following tables. These are partially drawn from *Principles and Overview of Processes (Chapter 3)* within GLVIA. Mitigation measures proposed to prevent/avoid, reduce and, where possible, offset or remedy any significant adverse landscape or visual effects are described.

15.2.8 Baseline Landscape Character Assessment

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:-

- 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.

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. Landscape value, quality and sensitivity are affected by factors including:

- *whether the resource is common or rare;*
- *whether it is considered to be of local, regional, national or global importance;*
- *whether there are any statutory or regulatory limitations / requirements relating to the resource;*
- *the quality of the resource;*
- *the maturity of the resource, and*
- *the ability of the resource to accommodate changes.*

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 National Parks, 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. High Sensitivity
Very Attractive Landscape	Locally or regionally designated landscapes – as designated in Area Plans or by the EPA - 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. Medium Sensitivity
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. Low Sensitivity
Poor Landscape	Low importance and degraded landscapes with few redeeming features. No evidence of being valued by the community	Damaged landscapes very capable of accommodating change. Very Low Sensitivity

Table 15.1 Determination of Landscape Value and Sensitivity

15.2.9 Criteria for Landscape Character Impacts

This EIAR Chapter 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 on the wider landscape are assessed with reference to landscape types or character areas. 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.

Terminology	Definition
Major	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.
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.

Table 15.2 Magnitude Criteria for Landscape Character Effects

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'.

15.2.10 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 GLVIA3, 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 establishes the area from which the proposal 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 open spaces. Selection is also based on a determination

of the extent of visibility towards the Application Site or from locations where there may be significant numbers of visual receptors who will see the proposed development e.g., main roads. 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.

Terminology	Definition	Summary
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 or visitors to heritage assets. Residents (at home).
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. Residents / Communities living within close proximity of the proposal.
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.

Table 15.3 Viewer Sensitivity and Types

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;
- Distance from proposed development site;
- 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.

Terminology	Definition
Major	A major change or obstruction of a view that may be directly visible, appearing as a prominent and contrasting feature and/or appearing in the foreground / middle ground.

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.
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.

Table 15.4 Magnitude Criteria for Visual Effects

15.2.11 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.

Terminology	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.

Table 15.5 Nature of Landscape and Visual Effects

15.2.12 Significance Criteria and Determination

Final judgment is made about which landscape effects are significant. Significance of an effect is determined by the combination of sensitivity or value of the affected receptor(s) and the predicted magnitude of change which combine to form a level of effect.

The assessment of likely significant environmental effects as a result of the proposed development takes into account the construction and operational phases. The duration of the effect has been 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.

This LVIA bases "Significance" of effects on the following definitions:-

- "Significant" in the Oxford Dictionary 2023 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."

<ul style="list-style-type: none"> • 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; and • Large scale changes 	<p>More Significant</p> <p>↑</p>
<ul style="list-style-type: none"> • Effects on poorer condition or degraded landscapes; • Effects on low sensitivity visual receptors; and • Small scale changes 	<p>↓</p> <p>Less Significant</p>

Table 15.6 Summary Scale of Significance

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.

**Landscape andude of Impact
Visual Sensitivity**

	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible minor	orNegligible or minor	Minor	Minor or moderate
Medium	Negligible minor	orMinor	Moderate	Moderate or major
High	Minor	Minor or moderate	Moderate or major	Major

Table 15.7 Assessment of Significance Matrix

15.3 Receiving Environment - Landscape Character/ Context in the Existing Environment

15.3.1 Establishing the Study Area

The study area includes the Application Site itself and the wider landscape where the 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 in Ireland. 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.

15.3.2 Site Location

The Application Site comprises c. 22.62 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 29.3km to the south.

The site comprises an irregular landholding stretching predominantly in a north-south trajectory between Flemington Lane to the north and the more recent Boulevard Road the south. To the east, the site abuts recently completed housing estates including those off Taylors Hill, Benmore Pastures and Flemington Park.



Photo 15.1 Existing Site Aerial Photograph

15.3.3 Baseline Landscape Character

15.3.3.1 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.

No watercourses or water bodies are noted on OSI Maps or evidenced in the topographical survey undertaken in September 2021. All fields are self-draining with ditches or sheughs located on field boundaries aside or below hedgerows.



Photo 15.2 View from core of Application Site looking east towards current edge of Balbriggan.

15.3.3.2 Land use and Vegetation

The site comprises farmlands set out across all or part of eight fields that are used for arable farming purposes. The fields are managed intensively with little room between the field edge and boundary hedges. Fields are bound by 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 open fields in pasture or arable use or rears of private properties off Flemington Lane with the boundaries defined by mixed quality and height hedgerows. Some of the field areas to the immediate west are being built out as a public park (Phase 1) as approved under F15A/0550 and subsequent permissions.

To the east, the boundary abuts housing estates that form part of the wider urban townscape of Balbriggan that spreads 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 or aside older farmsteads. There trees 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 2021 and identified 92 differing trees, tree groups or hedgerows and categorised their quality and suitability for retention. **See Tree Survey in Appendix 14A.**

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".

There were 2 no trees and 4 no. sections of hedgerow to the north of the site 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 or individual or group of species on the Application Site.



Photo 15.3 View east from Balbriggan Water Supply Scheme and Reservoir over Application Site lands

15.3.3.3 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 or formal roads or accesses onto the site and the lands are privately owned so access discouraged. A track has recently been constructed from the end of the cul-de-sac off Hamlet Lane across the site to provide access to lands to the west of the site which are currently being developed out as a public park (Phase 1) approved under F15A/0550 and subsequent permissions.

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 has extended significantly over the 20th century with housing estates characterising the landscape between the eastern site boundary and historic town core. The estates include Taylor Hill Grange, Bremore Pastures and Flemington Park which are accessed off new distributor roads including Boulevard Road to the

south off the R122 Clonard Road to the south.

There is no access to the site from the nearest housing estates to the east of the site. Several of the side and rear gardens of properties within these estates back onto the Application Site. The 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 northern extent of Balbriggan town. The road is set between low rise housing and hedgerows for much of its route that limit views across areas of adjacent townscape or landscapes.

Clonard Road, to the west is also 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.



Photo 15.4 View north over west Balbriggan from Clonard Boulevard Road to south of Application Site

15.3.3.4 Adjacent Landscape Character

Balbriggan (*Baile Brigín*) is a coastal town that had a recorded population of 21,722 in the 2016 Census. While the town has no recognised date of 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 has 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 1.3km due east 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.

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 notes that Balbriggan is “... characterised by a young and expanding population which has rapidly grown to in excess of 20,000 people over the last two decades. Major investment by Fingal County Council and other stakeholders in the town’s water services and roads infrastructure has provided a basis for the town to continue to grow in a sustainable manner”.



Photo 15.5 View west from open space aside Hastings Green towards the Application Site

The newer housing estates and developments to the east of Balbriggan largely date from the last couple of decades and comprising 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).

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.

15.3.3.5 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 farmlands and there are no amenities or facilities in this area other than the local road network.

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.



Photo 15.6 View from Balbriggan Martello Tower over Balbriggan FC pitches looking west in direction of the Application Site (which is obscured by intervening vegetation and topography)

Bremore Castle is located off Drogheda Street, 1.3km to the east, towards the coast. It is currently being restored by Fingal County Council. 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 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 FDP 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.

15.3.4 Published Landscape / Townscape Character Assessments

15.3.4.1 Fingal Development Plan 2023-2029 Interim Publication

The Fingal County Development Plan (FDP) came into effect on 5th April 2023. A number of errors subsequently came to light and any relevant errors in the Errata are reflected in this report.

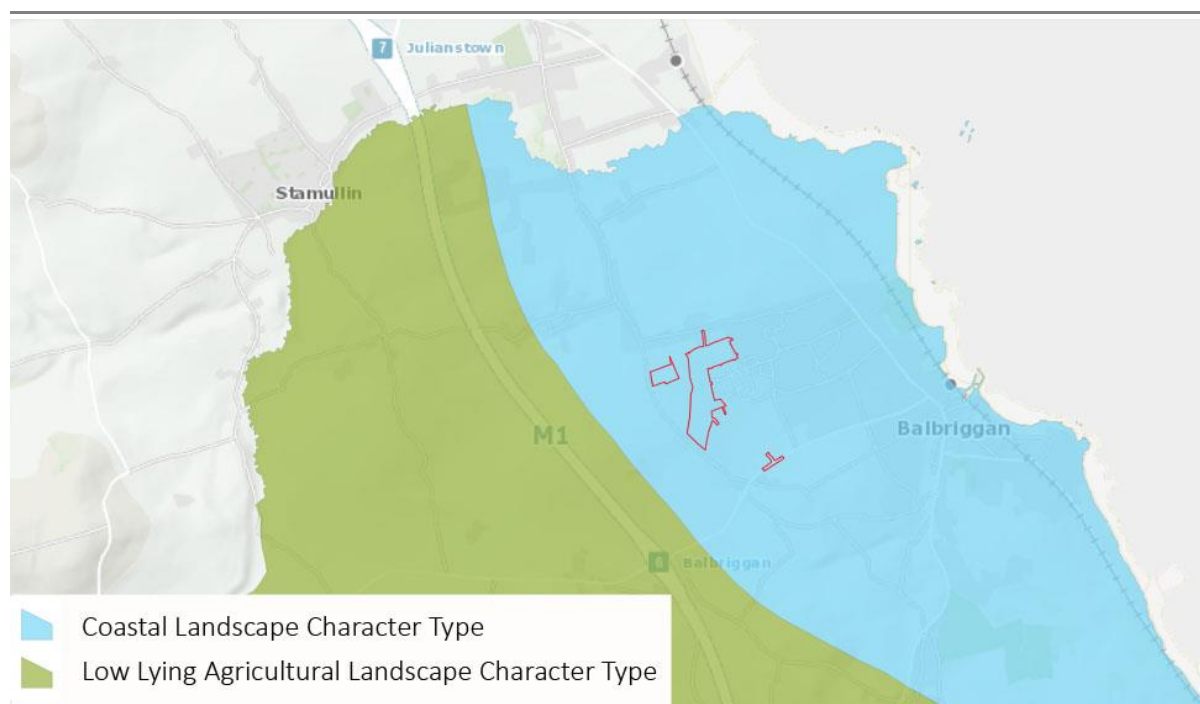


Figure 15.7 Landscape Character Types – as per Sheet 4 Fingal Development Plan

The current Development Plan includes a Landscape Character Assessment (LCA) that classifies Fingal's landscapes into types / values and sensitivities. The LCA divides the County into 6 Landscape Character Types and the Application Site is located within the Coastal Character Type. See Figure 14.1. 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.”

15.3.5 Planning and Landscape / Townscape Designations

15.3.5.1 National Spatial Strategy for Ireland

This Strategy designated Balbriggan as a 'Primary Development Centre' as originally identified in the Strategic Planning Guidelines.

15.3.5.2 Fingal Development Plan 2023-2029 (FDP)

15.3.5.2.1 Balbriggan Designations and Objectives

Balbriggan is the largest of the Self-Sustaining Towns in the Core Area with easy access off the M1 Motorway, it is also served by the main Dublin to Belfast rail line and commuter services to Dublin City. The FDP notes *“It 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 that *“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 FDP outlines the importance of the larger key settlements including Balbriggan in generating economic growth and employment opportunities with the potential of increasing its working population, with retail, ICT and financial services and manufacturing being the dominant employers.

Self-Sustaining Towns Policies include:

- *Policy CSP12 – In line with the NPS and RSES “Promote increased densities along public transport corridors.”*
- *Policy CSP34 – “Consolidate the growth of Self-Sustaining towns including .. Balbriggan .. as set out in the Settlement Strategy for RSES and by encouraging infill development and compact growth rather than greenfield development and by intensification at appropriate identified locations.”*
- *Policy CSP36 – “Support the sustainable long-term growth of Self-Sustaining Towns by focusing on growth within and contiguous to the core to create a critical mass of population and employment based on local demand and the ability of local services to cater for sustainable growth levels.”*
- *Policy CSP37 – “Promote enterprise and employment throughout the County including along the Dublin Belfast Economic Corridor including Balbriggan and work with other Local Authorities to promote Fingal and the wider mid-eastern region as an engine for economic growth.”*
- *Policy CSP38 – “Consolidate development and protect the unique identities of the settlements of .. Balbriggan ..”*

Self-Sustaining Towns Objectives include:

- *Objective CSO51 – “Proactively support and promote high quality services, social infrastructure, facilities, tourism offer, appropriate retail mix, and economic activity within Self-Sustaining Towns to meet the needs of existing and future growth in line with the scale and function of these towns within the Fingal Settlement Hierarchy.”*
- *Objective CSO52 – “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 – “Promote and facilitate the development and growth of Balbriggan and Skerries as primary service, social, cultural and local tourist centres in north Fingal.”*
- *Objective CSO56 – “Continue to implement, promote and support the ‘Our Balbriggan’ Rejuvenation Plan.”*
- *Objective CSO57 – Preserve and improve access to the harbours, beaches and seashores of Balbriggan, Skerries and Rush, while protecting environmental resources including water, biodiversity and landscape sensitivities.*

The *Our Balbriggan’ Rejuvenation Plan* states that Balbriggan has been one of Ireland’s fastest growing towns and the drive and rationale within this document focuses on community driven renewal by

strengthening the 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 centre by densification of appropriate commercial and residential developments ensuring a mix of commercial, recreational, civic, cultural, leisure, residential uses and urban streets, while delivery a quality urban environment which will enhance the quality of life of resident, visitor and workers alike.”*

15.3.5.3 Landscape Zoning

In the FDP Sheet No. 4 indicating Balbriggan Zoning Objectives, the Application Site lies within the Balbriggan Development Boundary and is primarily zoned as *“RA – Residential Area”* with the associated description to *“Provide for new residential communities subject to the provision of the necessary social and physical infrastructure”*. The Objective Vision as set out in the FDP states *“Ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. Provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities.”*

The Application Site lies outside of the Greenbelt Zone and also outside of the High Amenity Zone, which is located along the coastal fringes.

To the west, the site crosses into an area zoned *“OS - Open Space”* with the description to *“Preserve and provide for open space and recreational amenities”* and Objective Vision is 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.”* Note that the proposals are to retain this as open space and develop it out in accordance with the states objectives.

Figure 15.8 indicates lands assigned for Local Area Plans (LAPs), Masterplans and Framework Plans all of which provide a framework for development and economic growth. The Application Site does not lie within the lands allocated to these. Flemington LAP 4.B lies north of Flemington Lane in close proximity to the Application Site and is scheduled in FDP Table 2.16 to be commenced over the Plan period.



Figure 15.8 Landscape Zoning – as per Sheet 4 Fingal Development Plan

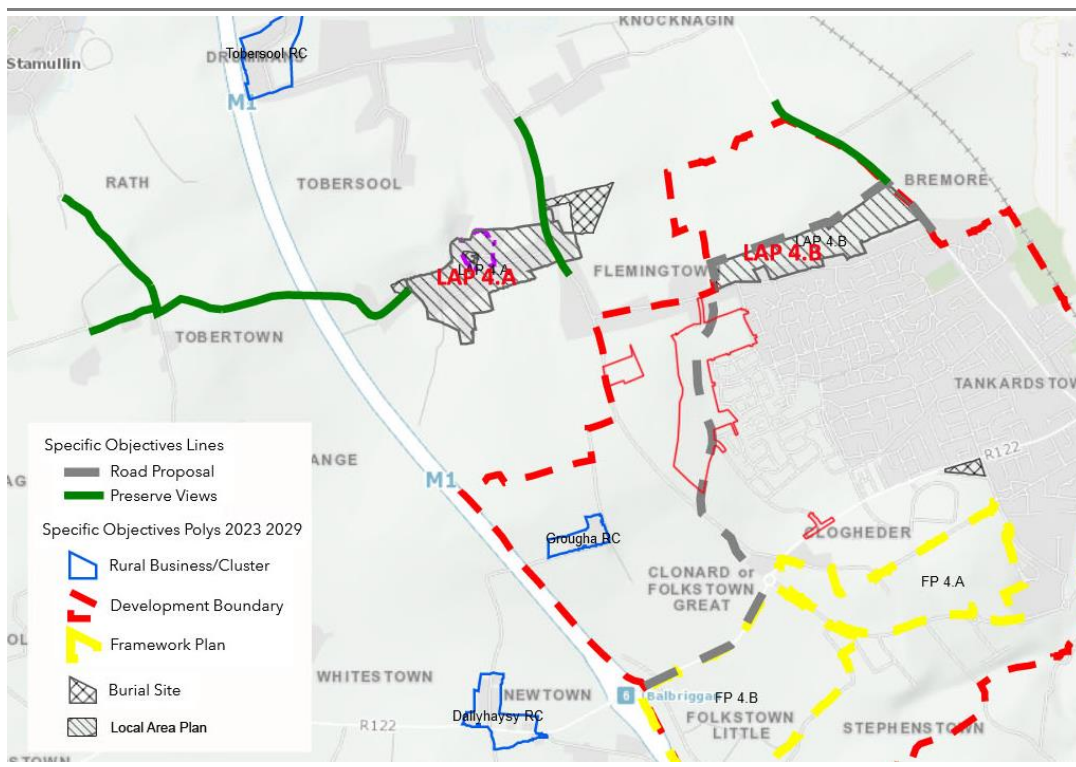


Figure 15.9 Specific Objectives – as per Sheet 4 Fingal Development Plan

15.3.5.4 Views and Prospects

Objective GINHO60 – Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development. The FDP notes that 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. Site surveys established that

none are in close proximity to the site or will be impacted by activity or land use on the Application Site.

15.3.5.5 Green Infrastructure

Policy GINHP1 seeks to promote an awareness of the benefits of resilient design and the multi-function nature of green infrastructure, which can be applied to the design and layout of new residential areas through the development of interactions between Public Open Space, Biodiversity, SuDS/Water Sensitive Design, Climate Change and Active Travel objectives.

Policy GINHP2 ensures 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 encourages measures for the 'greening' of new developments including the use of green roofs, brown roofs, green walls and water harvesting.

15.3.5.6 Public Open Space Requirements for New Developments

FDP Objective DMSO51 notes the requirements for public open space provision. With regards to the setting out and design of open space the FDP includes the following objectives:-

- *Objective DMS063 - Ensure open spaces are not located to the side or the rear of housing units;*
- *Objective DMS064 - Ensure open space provision is suitably proportioned and inappropriate narrow tracts are not provided;*
- *Objective DMS065 - Ensure, where possible, complementary facilities, such as dressing rooms and storage facilities, are provided as part of the open space provision, for new and existing areas;*
- *Objective DMS066 - Ensure developers lay out and maintain open space areas to a high standard, until such a time as they are taken in charge and facilitate the early handover of areas of public open space to the Council...*
- *Objective DMS067 - Require properly constituted management companies to be set up and ensure that the necessary management structures are put in place where it is intended that open spaces will be retained in private ownership...*

Objectives and Policies under Community Infrastructure and Open Space include:

- *Objective CIOSO36 – Provide a wide variety of resiliently designed, sustainably managed and accessible public open spaces, including allotments, community gardens, parklands and sporting facilities, on a hierarchical basis throughout the County in order to achieve a choice of open space facilities.*
- *Objective CIOSO37 – Increase the number of allotment spaces throughout the county during the lifetime of the Development Plan.*
- *Objective CIOSO39 – Ensure coherent clustering of active recreational open space facilities into a recreational hub arrangement unless a more practicable solution is demonstrated.*
- *Objective CIOSO40 – Requires that intensive recreational/amenity facilities be agreed with and given in ownership to the Council....*
- *Objective CIOSO41 – Ensure public open space is accessible and safety is prioritised by incorporating passive surveillance.*
- *Objective CIOSO51 – Ensure permeability and connections between public open spaces including connections between new and existing spaces, in consultation with residents.*
- *Policy CIOSP13 – Continue the development of a hierarchy of multifunctional active and passive recreational open spaces and facilities to serve all age cohorts.*

Playground facilities should cater for defined age groups and provide for a variety of facilities and play

opportunities. Objectives related to playground developments include:

- *Objective CIOSO44 – Facilitate the provision of appropriate scaled children’s playground facilities within new and existing residential development in line with the Council’s Play Policy.*
- *Objective DMSO68 - Provide appropriately scaled children’s playground facilities within residential development. Playground facilities shall be provided at a rate of 4 sq. m per residential unit. All residential schemes in excess of 50 units shall incorporate playground facilities clearly delineated on the planning application drawings and demarcated and built, where feasible and appropriate, in advance of the sale of any units;*
- *Objective DMSO69 - Ensure that in the instance of an equipped playground being included as part of a specific facility, it shall occupy an area of no less than 0.02 hectares. A minimum of one piece of play equipment shall be provided for every 50 sq. m of playground.*

15.3.5.7 Tree and Hedgerow Protection

FDP Policy GINHP21 affords protection to existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensures that proper provision is made for their protection and management. An examination of available maps notes that no vegetation on the Application Site is designated or the subject of Tree Preservation Orders.

15.3.5.8 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; and*
- *To the west of Hastings Lawn is an Excavation site (NIAH DU001-026).*

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**.

15.3.5.9 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 5 – Biodiversity**

15.3.6 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 Application Site lies to the north west of the Coastal Character Type and is rated as high sensitivity to development and Table 9.3 within the FDP assigns the Landscape Value

of this area is “Exceptional”.

Section 14.18.3 includes the following landscape principles for development.

- *Skylines, horizon and ridgelines should be protected from development.*
- *Sites with natural boundaries should be chosen, rather than elevated or open parts of fields. The form of new developments should be kept simple and they should be sited within existing shelter planting or within the contours of the land to minimise visual impact.*
- *Clustering with existing farmhouse and/or farm buildings is generally preferable to standalone locations.*
- *Field and roadside hedgerows should be retained. Proposals necessitating the removal of extensive field and roadside hedgerow should not be permitted.*
- *The retention and active management of trees and woodland blocks should be promoted.*
- *The use of trees and woodlands to contain new development should be encouraged.*
- *Strong planting schemes using native species, to integrate development into these sensitive landscapes, will be required. New planting needs to be carefully located and selected.*
- *The character of the coastal visual compartments should be retained by preventing intrusive developments on headlands, promontories and coastal lands within the compartments. The coastal skyline should be protected from intrusive development.*

FDP 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 FDP are the views out to sea and coastal areas with views to the north and south rather than the western urban fringe of Balbriggan including the Application Site lands.

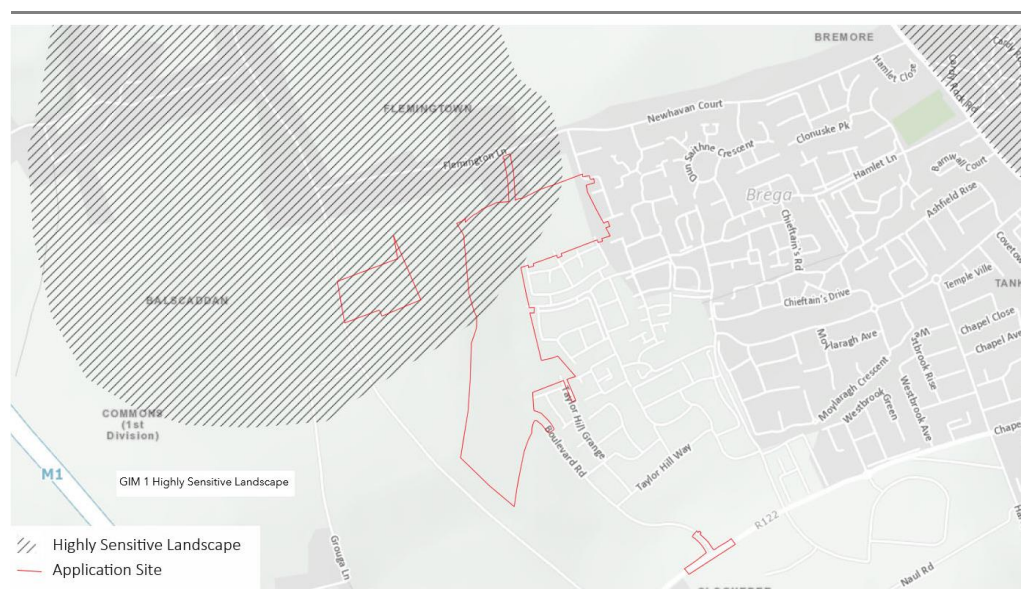


Figure 15.10 Landscape Sensitivity Map – as per Fingal Development Plan

The interactive map for FDP Sheet 4 –hatches part of the site as “highly sensitive” though the core of this rating is clearly to the north and north-west beyond Flemington Lane and the coastal fringe. Taking 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 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 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.

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 (e.g., comparable to coastal areas) would have been factored into considerations by Fingal County Council in determining this designation.

15.3.7 Townscape / 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 15.11 View south across Application Site lands with townscape edge of Balbriggan to left (east)

West Balbriggan is characterised by extensive housing estates that have been built out over 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.

15.3.8 Baseline Visual Evaluation

Site surveys were undertaken between August 2021 and March 2023 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.



Extract from Viewpoint Locations Map courtesy of 3DDB (2021)

Map 15.12 Viewpoint Locations Map

Viewpoints were selected within publicly accessible areas based on the following criteria:-

- 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 15.4 indicates the views in the FDP Sheet 4 that should be preserved but site surveys established that none are in close proximity to the site or will be impacted by activity or land use on the Application Site.

Selected representative viewpoints for the visual assessment are taken from the following locations:-

- Viewpoint 1: Flemington Park;*
- Viewpoint 2: R132 Road, Coney Hill;*
- Viewpoint 3: Balbriggan Harbour;*

- Viewpoint 4: Hastings Green;
- Viewpoint 5: Taylors Hill;
- Viewpoint 6: Taylors Hill Boulevard;
- Viewpoint 7: Clonard Road, Clogheder;
- Viewpoint 8: Clonard Boulevard Road (near Bremore ETS School);
- Viewpoint 9: Clonard Road (near Clonard Cross); and
- Viewpoint 10: Balbriggan Water Supply Scheme and Reservoir off Clonard Road.

15.4 Characteristics of the Proposed Development

A detailed description of the proposed development is provided at Chapter 2 and is not repeated here. The development is however summarised as follows:-

- (i) *The demolition of an existing single storey dwelling (151sq.m) (Eircode K32 KR40), associated single-storey storage shed (14.9sq.m), and larger single-storey agricultural shed outbuilding (366sq.m), all of which are located to the south of Flemington Lane.*
- (ii) *The construction of 564 no. dwelling units, consisting of 378 no. houses ranging in height from two to three storeys (127 no. terraced two-bedroom houses; 5 no. three-bedroom detached houses; 156 no. three-bedroom semi-detached houses; 76 no. three-bedroom terraced houses; and 14 no. four-bedroom detached houses); 28 no. duplex blocks, ranging in height from two to three storeys, comprising 84 no. duplex units (22 no. one-bedroom duplexes, 36 no. two-bedroom duplexes and 26 no. three-bedroom duplexes) and 10 no. apartment blocks (FM1, FM2, M1, M2, FP1, HN1, HC1, HC2, HC3, and HS1) ranging in height from three to five storeys, comprising 102 no. apartments (35 no. one-bedroom apartments and 67 no two-bedroom apartments). The proposed development is set out into 5 no. key Character Areas as follows; Hampton Park South (southern-most portion of the site), Hampton Park Central (central-western portion of the site), Tanners Lane (central-eastern portion of the site), Hampton Park North (north-western portion of the site) and Flemington Park (north-eastern portion of the site). The number and mix of units comprised within each of these Character Areas is detailed as follows:*
- (a) *Hampton Park South Character Area - containing a total of 103 no. dwelling units, consisting of 71 no. houses, all of which are two storeys in height (46 no. three-bedroom semi-detached houses, 1 no. three-bedroom detached house, 8 no. three-bedroom terraced houses, and 16 no. two-bedroom terraced houses); 5 no. duplex blocks, ranging in height from two to three storeys, consisting of (5 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 4 no. three-bedroom duplex) and 1 no. apartment block (HS1) which is four storeys in height and consist of 14 no. apartments (6 no. one-bedroom units; 8 no. two-bedroom units).*
- (b) *Hampton Park Central Character Area - containing a total of 142 no. dwelling units, consisting of 88 no. houses ranging in height from two to three storeys (26 no. three-bedroom semi-detached houses; 22 no. three-bedroom terraced houses, 4 no. three-bedroom detached houses and 36 no. two-bedroom terraced houses) 7 no. duplex blocks all of which are three storeys in height, consisting of 18 no. duplex units (2 no. one-bedroom duplexes, 9 no. two-bedroom duplexes and 7 no. three-bedroom duplexes) and 3 no. apartment blocks (HC1, HC2 and HC3) ranging in height from three to five storeys, consisting of 36 no. apartments (17 no. one-bedroom units and 19 no. two-bedroom units). The Hampton Park Central Character Area also comprises 1 no. two storey childcare facility with an area of 354sq.m.*
- (c) *Tanner's Lane Character Area - containing a total of 54 no. dwelling units, consisting of 36 no. houses all of which are two storeys in height (26 no. three-bedroom semi-detached houses; 4 no. three-bedroom terraced houses and 6 no. two-bedroom terraced houses), 3 no. duplex blocks, all of which are three storeys in height, consisting of 12 no. duplex units (1 no. one-bedroom duplex, 6 no. two-bedroom duplexes and 5 no. three-bedroom duplexes)*

and 1 no. apartment block (M2) which is three storeys in height, consisting of 6 no. apartments (6 no. two-bedroom units).

- (d) Hampton Park North Character Area - containing a total of 128 no. dwelling units, consisting of 84 no. houses ranging in height from two to three storeys (28 no. two-bedroom terraced houses; 38 no. three-bedroom semi-detached houses and 18 no. three-bedroom terraced houses), 8 no. duplex blocks ranging in height from two to three storeys, consisting of 24 no. duplex units (7 no. one-bedroom duplexes; 9 no. two-bedroom duplexes and 8 no. three-bedroom duplexes) and 2 no. apartment blocks (HN1 and M1) ranging in height from three to four storeys, consisting of 20 no. apartments (6 no. one-bedroom units and 14 no. two-bedroom units). The Hampton Park North Character Area also comprises 1 no. two storey childcare facility with an area of 494.6sq.m.
- (e) Flemington Park Character Area - containing a total of 137 no. dwelling units, consisting of 99 no. houses all of which are two storeys in height (41 no. two-bedroom terraced houses; 20 no. three-bedroom semi-detached houses, 24 no. three-bedroom terraced houses and 14 no. four-bedroom detached houses); 5 no. duplex blocks ranging in height from two to three storeys, consisting of 12 no. duplex units (7 no. one-bedroom duplexes, 3 no. two-bedroom duplexes and 2 no. three-bedroom duplexes) and 3 no. apartment blocks (FM1, FM2 and FP1) ranging in height from three to four storeys, consisting of 26 no. apartments (6 no. one-bedroom units and 20 no. two-bedroom units). The Flemington Park Character Area also comprises 1 no. two storey childcare facility with an area of 379 sq.m.

All ground floor apartments have access to private terraces; all upper-level apartments have access to private balconies, and all houses have access to private rear gardens.

The proposed development also includes:

- (iii) the construction of 9 no. commercial units (totalling 593.2 sq.m.) and 6 No. communal units (totalling 315.1 sqm) all of which are located at the ground floor levels of apartment blocks HS1, HC1, HC2, HC3, HN1 and FP1).
- (iv) the construction of 2 no. primary vehicular/pedestrian entrances, one from the southeast (upgrade of existing access from Boulevard Road (also known as Taylor Hill Boulevard)) and one from the north (off Flemington Lane), the construction of a secondary access route from the east (access from Hamlet Lane), the construction of 5 no. tertiary access routes (access from Flemington Park, Hastings Avenue, Hastings Drive, Hastings Lawn and Taylor Hill Grange) and the construction of a new main spine road through the site.
- (v) the provision of Class 1 Public Open Space in the form of a playing pitch (c. 2.86ha) located to the east of Clonard Road (also known as Bridgefoot Road) (L1130 Local Road), within the western extent of the subject site, this public park is immediately west of an existing playing field which was approved under a separate application. A number of smaller Class 2 Public Open Space areas and communal open space areas to are also proposed throughout the site.
- (vi) a total of 927 no. car parking spaces are proposed, this includes 806 no. resident parking spaces, 94 no. visitor spaces, 11 no. disabled parking spaces (numbers include 162 no. EV points), 7 no. spaces allocated to creche parking and 9 set down spaces. A total of 2,014 no. bicycle spaces are proposed, this includes 1,326 no. resident bicycle spaces, 640 no. visitor spaces and 48 no. spaces allocated to creche bicycle parking. Planning permission is also sought for landscaping and infrastructural works, foul and surface water drainage, bin storage, 2 no. ESB substations, open space areas including playgrounds, boundary treatments, internal roads, footpaths and cycle paths and all associated site works to facilitate the development. An Environmental Impact Assessment Report (EIAR, formerly known as an EIS) accompanies the application.

15.4.1 Landscape Design Considerations

Across the site, areas of Class One, Class Two and Class Two (with SuDs) extends to 5.13 hectares. Further open space is associated with residual and private amenity areas.



Visualisation courtesy of 3DDB (2023)

Visualisation 15.13

Proposed Site Setting – Internal Site View

The landscape works include for planting of trees within parkland areas and the central boulevard core through the proposed development that will entail over 700 no. 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. 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 will be predominantly indigenous and species selection 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 plant of similar size and species. Trees supply and planting shall

correspond to *BS 8545 Trees: from nursery to independence in the landscape - Recommendations*.



Visualisation courtesy of 3DDB (2023)

Visualisation 15.14

Proposed Site Setting – Internal Site View

While the baseline site character will 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 this part of Balbriggan to have significantly enhanced tree cover and a more wooded character in the longer term with positive effects on amenity, environment and ecology.

15.5 Potential Impact 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.

15.5.1 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;

- 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 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.

15.5.2 Operational Phase

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 14.4 above.

15.5.2.1 Application Site

The proposal will result in permanent changes to the landscape character of the Application Site due to loss of farmland and hedgerows. This will be replaced by a built townscape character across this part of the 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 564 no. dwelling units (equating to a density of 35.6 dwellings per hectare).

All boundary trees and hedgerows (apart from approximately 80m on the Flemington Lane boundary) will be retained. Peripheral hedgerows and wooded belts will be augmented and retained ensuring that they contribute to visual screening and buffers. The loss of 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 generally low profile of the internal hedgerows being removed ensures their consequence in landscape terms is not significant.

The collective development will have **Major** effects to the character and sense of place across the site but would not necessarily be one of an adverse nature on account of the significant landscape and open space development (equating to approximately 23% of the Site) that would contribute to the local landscape character in the medium to longer term. Furthermore, 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 relevant Development Plan) due to current land-use and its location on the urban / rural interface.

15.5.2.2 Flemington Lane

For road users and residents of the Flemington Lane on the 750m section between Flemington Park and the Flemington Road junction, there would be a conscious feeling the urbanised form has shifted west beyond the current town edge and that areas perceived as open landscape or farmland have become part of the Balbriggan townscape. Across much of the western town, the effects will be **Negligible** due to intervening townscape and vegetation on the site boundaries which will remain intact. 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 view now including further residential properties and a new access road. The proposed dwellings associated with this development are set back over 150m from Flemington Lane allowing planting of trees and hedgerows in the intervening landscape that would have positive effects on the character of this section of the road by the medium term offsetting some of the perceived adverse effects deriving from the loss of farmland for urban development in this area.

Residential properties that abut the site boundary within the Flemington Park, 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 backdrop changes from open farmland to built townscape. Effects to the internal areas within these estates to the east are lessened due to intervening vegetation and built elements and these areas are already heavily urbanised in character; effects are judged as **Slight Neutral**. Further, the associated open space within this proposed development is aligned to link in with or connect to existing open spaces and linkages within the existing estates. Any significance and magnitude of effects will reduce over time as the landscape measures mature as the proposal allows for retention and augmentation of existing boundary vegetation.

15.5.2.3 Balbriggan

In areas to the west of Balbriggan, there would be a conscious feeling the urbanised form has shifted south beyond the current town edge with areas perceived as open landscape or farmland becoming part of the 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 new site entrances and road will be the most appreciable or readily discernible changes with **Moderate** effects on short sections of Flemington Lane and Clonard Road but given the actual residential development is set back over 300m from these roads, any impacts deriving from this would be of a **Slight** and not-significant nature. The design includes for planting of trees and hedgerows in the intervening landscape (and retention of hedgerows on the site periphery) that would have **Slight Positive** effects by the medium-term offsetting some of the perceived adverse effects deriving from the loss of farmland for urban development in this area.

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. Within the majority of the Chieftain's Way residential area, effects are judged as **Slight Neutral**. Any significance and magnitude of effects will reduce over time as the landscape measures mature as the proposal allows for retention and augmentation of existing boundary vegetation.

The proposed development will be largely obscured from the local road network (including Station Road, 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 landscape type with the accumulation of hedgerows but there will be a conscious feeling or sense that Balbriggan has extended. In landscape of 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 Neutral**.

The raised elevation of part of the Clonard Road allows partial views over the site and passing traffic would not be 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.

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.

15.5.2.4 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. 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.

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
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	Medium / High	Change of peripheral town edge area to townscape	Neutral / Negligible	Neutral / Negligible	Low to Negligible Not Significant

Character Type					
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Table 15.8 Landscape Effects Summary

15.5.2.5 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 are no existing buildings on the Application Site. The nearest residential areas are in the Chieftains Way estate with approximately 20 no. detached houses set off Flemington Lane to the north and Clonard Road to the west (Heglas and Balcaddan Pre-School). 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.

15.5.3 Visual Effects

The following tables summarise the views and context of the 10 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 included as Appendix 14B) and annotated site photos from other selected views for ease of reference.



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.9 Viewpoint 1 - Flemington Park

Viewpoint Locations	Flemington Park	Distance to Application Site	50m
Viewpoint Baseline	<p>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.</p> <p>The majority of visual receptors will be local residents and users of the associated open spaces.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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 between the trees and hedgerows that align 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.</p> <p>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.</p>		

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.
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Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.10 Viewpoint 2 – R132 Road, Coney Hill, Balbriggan

Viewpoint Locations	R132 Road, Coney Hill	Distance to Application Site	950m
Viewpoint Baseline	<p>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.</p> <p>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.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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.</p> <p>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.</p>		
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.		



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.11 Viewpoint 3 – Balbriggan Harbour and Beach

Viewpoint Locations	Balbriggan Harbour	Distance to Application Site	2km
Viewpoint Baseline	<p>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.</p> <p>The majority of visual receptors will be those who are at the harbour for work purposes or recreation.</p>		
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.		



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.12 Viewpoint 4 – Hastings Green

Viewpoint Locations	Hastings Green	Distance to Application Site	75m
Viewpoint Baseline	<p>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 which is on slightly elevated lands. Evident on the site is a partially completed road. The majority of the Application Site to the north and south is obscured by intervening buildings within the Hastings and Bremore areas.</p> <p>The majority of visual receptors will be local residents and users of the associated open spaces.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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.</p> <p>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.</p>		

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.
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Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.13 Viewpoint 5 - Taylors Hill

Viewpoint Locations	Taylors Hill	Distance to Application Site	>25m
Viewpoint Baseline	<p>Taylors Hill 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 set off a broad road and associated open space that allows partial views of the Application Site which is on slightly elevated lands to the west. The site currently is evident as an open field that rises towards a hedgerow on the skyline. The majority of the Application Site to the north and south is obscured by intervening buildings within the Taylors Hill estate.</p> <p>The majority of visual receptors will be local residents and users of the associated open spaces.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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 on an intervening new road. 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.</p> <p>The key change will be the sense that townscape has extended and that this part of Balbriggan is no longer the edge of the town having Moderate effects.</p>		
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.		



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.14 Viewpoint 6 – Taylor's Hill Boulevard

Viewpoint Locations	Taylor's Hill Boulevard	Distance to Application Site	>25m
Viewpoint Baseline	<p>Taylor's Hill Boulevard is part of a wider housing estate located to the west of the 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.</p> <p>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.</p> <p>The majority of visual receptors will be local residents.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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.</p> <p>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.</p>		
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.		



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.15 Viewpoint 7- Bremore Educate Together Secondary School

Viewpoint Locations	Clonard Boulevard Road	Distance to Application Site	745m
Viewpoint Baseline	<p>This viewpoint is from the turning head at the end of Clonard Boulevard Road near the Bremore ETS where the slight elevation in land towards Clogheder that allow open views through a security fence over 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 had to discern its full extent due to intervening housing estates.</p> <p>The majority of visual receptors will be students, teachers and those in the area for reasons related to the Bremore ETS.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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.</p> <p>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.</p>		

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.
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Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.16 Viewpoint 8 - Clonard Road, Clogheder

Viewpoint Locations	Clonard Road, Clogheder	Distance to Application Site	1.1km
Viewpoint Baseline	<p>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.</p> <p>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 had to discern its full extent due to intervening housing estates.</p> <p>The majority of visual receptors will be road users including those accessing the nearby Bremore ETS and those shopping /visiting the Millfield Shopping Centre.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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.</p> <p>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.</p>		
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.		



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.17 Viewpoint 9 – Clonard Road

Viewpoint Locations	Clonard Road (near proposed site entrance)	Distance to Application Site	>0m
Viewpoint Baseline	<p>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 render limited views to the east. 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.</p> <p>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.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>The south-west portion of the proposed development will have Moderate effects on this view on account of the new road and with the nearest new houses located approximately 75m from the Clonard Road. While recognising, there are significant landscape and visual impacts due to proximity, the proposed development can be accommodated and absorbed into this landscape type and part of Balbriggan without causing significant detrimental or unacceptable landscape or visual effects. This is on the basis that there is currently little reason to stop or value the current view and the development would not close off or detrimentally affect any key vantage in the Balbriggan area.</p>		
Significance Summary	<p>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.</p>		



Extract of Photomontage View courtesy of 3DDB (2023)

Table 15.18 Viewpoint 10 - Balbriggan Water Supply Scheme and Reservoir off Clonard Road

Viewpoint Locations	Balbriggan WSS and Reservoir	Distance to Application Site	125m
Viewpoint Baseline	<p>The WSS and reservoir are located within a former field area set 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 that offers an open view over the broader Balbriggan townscape and 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.</p> <p>This is essentially a private view as WSS lands and not publicly accessible but is representative of potential views from this area though such views are not afforded from the adjacent section of Clonard Road due to roadside hedgerows.</p>		
Viewpoint Sensitivity	Medium		
Predicted Change	<p>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.</p> <p>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.</p>		
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.		

15.6 Do-Nothing Approach

Given that the area is designated for a “*new residential communities*” in the FDP, it is likely that the site will be subject to similar applications for housing development. The nature of any future applications is impossible to determine but they could be of a more piecemeal and disjointed nature.

Until any application is granted, it is reasonable to assume there will be limited visual or character alterations to the existing situation and landscape setting. The landowners are aware of the designations and the incentive for extensive works to improve or maintain the existing landscape for anything other than intensive agricultural use is limited on account of the designation. On balance of these factors, it is considered that the continued use of the land for farming purposes represents a **Low** magnitude of landscape impact.

15.7 Remedial or Reduction Measures: Mitigation

15.7.1 Construction Stage

Mitigation measures during the temporary and short-term construction stage include the following:-

- Retention of boundary vegetation and erection of screen hoarding;
- Time deliveries outside of peak hours;
- Minimise hedgerow and tree removal; and
- Control of disturbance including dust, mud, noise, lighting.

The subsoils and topsoil are to be retained on site and reused to ensure no requirement for moving material off site.

The hedgerows will be managed to remove dead, dying and dangerous branches and any colonising scrub or brier. 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.

15.7.2 Operational Stage

The Proposed Development includes extensive planting with a mix of native and ornamental tree species to create a natural environment with colour and seasonal interest. The planting of semi-mature trees will give instant impact and provide enclosure and screening. A green core connects parks and open spaces and runs from the entrance through the development. Tree lined avenues, planted embankments, pocket parks, orchard tree planting will create an attractive urban development. The total open space equates to 5.128ha which is 23% of the Application Site area.

Across the site are seven areas of key public open space which have capacity and scale to accommodate informal and various amenity and landscape / parkland areas. These are 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 main spine road leading into the development will be planted with street trees in broad grass verges to create a strong green link through the development for motorists, cyclists and pedestrians;
- Public and Communal Open Space includes extensive planting with a mix native and ornamental tree species to create a natural environment with colour and seasonal interest. The general principle will correspond with Development Plan Objectives and exceed the requirement for 15% Open Space provision with recreational and amenity spaces set throughout the site offering residents various parks and parkland areas. Public spaces will feel welcome to all, while communal spaces will be differentiated from the public areas either physically or perceptively;

- Biodiversity and habitats creation or enhancement will be the objective in terms of landscape design to the site edges;
- The planting of semi-mature trees will give instant impact and provide enclosure and screening. High canopy trees or ones that will be easy to manage in terms of such will be used along avenues to ensure vehicular sightlines are retained;
- Green links connects peripheral parks and internal open spaces including tree lined avenues, planted embankments, pocket parks, and ecology / biodiversity areas. The connectivity will include set out walking or running trails across the site that can connect on to adjacent lands;
- Provision of playgrounds to cater for the recreational and educational requirements of children of residents;
- The open spaces are designed with consideration given to long-term management ensuring this is not onerous with heavy resource requirements; and
- Due regard is given to coordinating with engineers in terms of Sustainable Urban Drainage Systems (SuDS) with the landscape designs working around required swales, compensation areas and retained watercourses or culverts.

15.7.3 Landscape Mitigation

As noted above, within the core of the Application Site, there is very limited existing landscape features or vegetation of note or worthy of retention with field patterns subject of historical disruption and hedgerows being of limited landscape (or ecological) interest. It is the design intention to ensure that peripheral hedgerows and associated trees are retained intact and augmented as part of this proposal.

The objectives include creation of different landscape treatments including avenue tree types and boundary treatments to create identifiable character zones. The works will include:-

- Tree lined avenues;
- Provision of pathway network to provide a safe and traffic-free environment for walkers, runners and cyclists;
- Landscape areas will be retained and enhanced towards the site boundary and throughout the site to allow for connected habitat creation and wildlife corridors. On-going open space management plans will identify areas that can be managed to encourage habitats creation as the designed landscape matures and evolves;
- The proposed layout includes significant open space and multi-functional public realm areas extending to 23% of the Application Site area which are interconnected by landscaped links that have both a functional connection and aesthetic purpose;
- The main open spaces which will have a mix of informal and formal landscape character with recreational and amenity spaces. Each area of public space has a particular landscape character and design to give them a distinct or notable sense of place;
- All age groups will be catered for with the layout and design of open spaces based on best practice in terms of universal design to be safe and aesthetic areas that will complement interaction between varied groups. 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);
- 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 realm areas, communal and private spaces. Public spaces will feel welcome to all, while communal spaces will be differentiated from the public areas either physically or perceptively; and
- Open spaces are designed with consideration given to their long-term management ensuring this is not onerous with heavy resource requirements.

The extent of structure planting, amenity planting, garden trees, hedgerows and wooded belts will

enhance the overall wooded character and nature of the site and contribution to ecology comparative to the current situation. The landscape works will include the following:-

- Lowland meadow – 1,492m²;
- Low boundary hedgerows (between properties) - 1,417 linear metres;
- Augmenting of existing boundary hedgerows – c.301m²;
- Proposed hedgerows – 1023 linear metres;
- Slope planting (shrub and woodland) - 2,894m²;
- Shrub and groundcover planting - 4,514m²; and
- Woodland – 1,077m²

15.8 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 on an area of land designated for “RA – Residential Area” and therefore it and the adjacent lands are predicted to have land-uses of this nature and type.

15.9 Residual Impact of the Proposed Development

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 public open space and part of a wider landscape development proposal. 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 standard trees and – in conjunction with more general woodland, shrub and hedgerow 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.

15.10 Interrelationships

The landscape and visual impact of the proposed development can be related to cultural heritage,

human beings, material assets and ecology.

All 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.

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. There are no designated natural environment areas or landscape close enough to be affected by activity on the Application Site.

15.11 Worst Case Impacts

The visual effects are assessed on the basis of and photography undertaken for the photomontages / visualisations on a clear day (May 2023) in good lighting conditions when leaf cover on vegetation in this area was limited. 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.

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.

15.12 Monitoring

The management of all 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.

15.13 Difficulties Encountered

No particular difficulties were encountered in compiling information for this report.

16.0 INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

16.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants in association with the various EIAR consultants. More specifically, this chapter of the EIAR was prepared jointly by, Mrs. Muireann Coughlan, Associate, and Ms. Danielle O'Leary, Senior Planner, with Hughes Planning and Development Consultants.

Mrs. Muireann Coughlan graduated with honours from University College Cork with a Masters in Planning and Sustainable Development (MPLAN) in 2010, having previously completed a joint honours Bachelor of Arts degree in Geography and Sociology. She has also completed a Post Graduate Certificate in Design Management. Muireann is currently an Associate with Hughes Planning and Development Consultants. Prior to this, she worked in local government and private consultancies in both Ireland and the United Kingdom. Muireann has 13 years of experience in the field of planning, which has included providing consultancy services in respect of several major residentially-led projects. Muireann is a Full Member of the Royal Town Planning Institute (RTPI) and Corporate Member of the Irish Planning Institute (IPI).

Ms. Danielle O'Leary of Hughes Planning and Development Consultants, graduated with honours from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2018, having previously completed a Bachelor of Science Degree in Earth and Environmental Systems Sciences from University College Cork (UCC) in 2016. Danielle has over 5 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major residentially-led projects, including EIA. Danielle is currently a Senior Planner in the practice of Hughes Planning and Development Consultants and is a member of the Irish Planning Institute (IPI).

The preceding Chapters 4.0 to 15.0 of this EIAR identify the potential environmental impacts that may have occurred as a result of the proposed development in terms of Population and Human Health; Biodiversity; Land and Soils; Water; Noise and Vibration; Air Quality; Climate; Wind and Microclimate; Climate; Material Assets; Waste; Archaeology, Architectural and Cultural Heritage; Landscape and Visual Amenity; Material Assets- Transport; and Material Assets - Utilities. All of the potential significant effects of the proposed development and the measures proposed to mitigate them have been outlined in the preceding chapters of this report. However, for any development with the potential for significant environmental effects there is also the potential for interaction amongst these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect. The purpose of this chapter is to identify and draw attention to interactions and interdependencies between the various chapters of this EIAR and associated topic specific assessments.

As previously stated, the scoping process of this EIAR occurred concurrently with the masterplanning process. As members of the design team contributed to this EIAR, detailed elements of the scheme evolved. 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. For example, the proposed development has been amended to provide a strong urban edge along the main spine road through the site, this has informed the open space layout and design, while elevational treatments and building positioning were revised following the preparation of the daylight and sunlight assessment. Similarly, archaeological features on-site have informed the positioning of buildings and the location of proposed open spaces, following a detailed assessment undertaken by the project Archaeologists. Most of the interactions informed the design approach undertaken by the project Architect in the first instance and were considered to be design considerations and site constraints.

16.2 Impact Definitions

Section 3.7.7 of the *Draft Guidelines on the Information to be Contained in Environmental Impact Statements* published by the EPA provides guidance on how to measure and define potential impacts

on the environment. The following assessment criteria have been used to assess significant interactions:

Impact Definition	Impact Definition
Neutral	An interaction which does not affect the environment
Positive	An interaction which improves the quality of the environment
Negative	An interaction which reduces the quality of the environment
Significance	Definition
<i>Imperceptible</i>	<i>Capable of measurement but without noticeable consequences</i>
<i>Not Significant</i>	<i>Causes noticeable changes in the character of the environment but without noticeable consequence</i>
<i>Slight</i>	<i>Causes noticeable changes in the character of the environment without affecting sensitivity</i>
<i>Moderate</i>	<i>Alters character of environment consistent with existing and emerging trends</i>
<i>Significant</i>	<i>By its character, magnitude and duration or intensity alters a sensitive aspect of the environments</i>
<i>Profound</i>	<i>Obliterates sensitive characteristics</i>

Table 16.1 Assessment criteria utilised in assessing the significance of interactions

16.3 Summary of Principal Interactions

The following tables highlight the interactions that occur between topics addressed by this EIAR and rate the outcome of those interactions employing the above criteria.

Subject Interaction	Interaction With	Interactions/Inter-Relationships	Impact Significance
Population and Human Health			
Population & Human Health	Air Quality	<p>There will be some wider impacts felt to the wider community during the construction phase by way of noise, dust and traffic. However these impacts are considered unlikely to be significant. Appropriate mitigation measures are specified in Chapters 8, 9, 10 and 12 of this EIAR.</p> <p>The construction of the proposed development will be done so in accordance with a Construction and Environmental Management Plan and Traffic Management Plan (both of which will be agreed with Fingal County Council) which will ensure that the works do not pose an adverse risk to health and safety of both the surrounding properties/community and the workers on site.</p> <p>The measures that will be put in place during construction of the proposed</p>	Neutral <i>Slight</i>

		development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health.	
Population & Human Health	Landscape & Visual Impact	<p>The construction phase of the development will include site works comprising, demolition of 3 no. existing structures, site clearing, excavation, infrastructure works in preparing the road and drainage infrastructure.</p> <p>This has the potential to result in the temporary degradation of the local visual amenity on a short-term basis. Construction works are to take place on a phased basis, which will moderate the potential impacts on adjoining lands.</p> <p>In addition, the construction of the proposed development will be done so in accordance with a Construction and Environmental Management Plan and Traffic Management Plan (both of which will be agreed with Fingal County Council) which will ensure that the works do not pose an adverse risk to the environment.</p>	Neutral <i>Slight</i>
Population & Human Health	Water (Hydrology & Hydrogeology)	There is a potential risk to Human Health should the ground water of the existing water supply become contaminated during the construction or operational stages, and the water is consumed. To mitigate against these risks measures outlined within Chapter 7 of the EIAR will be adopted in full during the construction phase.	Neutral <i>Not Significant</i>
Population & Human Health	Climate	Construction vehicles, generators etc., may give rise to some CO ₂ and N ₂ O emissions. However, due to the short-term and temporary nature of these works, the impact on climate will not be significant.	Neutral <i>Not Significant</i>
Population & Human Health	Biodiversity	There is potential for disturbance to breeding birds to occur during initial construction stages. Planting of shrub and tree species to take place as part of project design. No removal of vegetation to take place during the nesting season. Standard construction phase measures are proposed.	Neutral <i>Not Significant</i>
Biodiversity			
Biodiversity	Landscape & Visual Impact	The site comprises primarily of built land. Demolition and construction will remove existing habitats on site. Planting of a range of native and non native trees and shrubs are incorporated into the landscape plan.	Neutral <i>Not Significant</i>

Biodiversity	Water (Hydrology & Hydrogeology)	Deterioration in water quality due to surface water discharges associated with the Construction Phase. Mitigation measures to protect surface waters and best practice construction measures will be implemented.	Neutral <i>Not Significant</i>
Biodiversity	Fauna	The construction phase of the development could impact on site fauna including birds due to a loss of potential foraging and nesting habitats and bat habitats. On-site hedgerows and trees should not be disturbed during the breeding/rearing season, which typically lasts from March to June whilst appropriate bat lighting has been incorporated into the design.	Neutral <i>Not Significant</i>
Biodiversity	Overall Ecology	SuDS measures and a landscape strategy will be implemented.	Positive <i>Not Significant</i>
Land and Soils			
Land and Soils	Water (Hydrology & Hydrogeology)	There is potential for hydrocarbon impact on surface water run-off which could enter soils and surface waters on site if the road drainage was inadequate without petrol interceptors. For this reason, the presence of petrol, diesel and other fuel sources was investigated by analysis of soils and ground water. Car parking is to be on impermeable areas that are equipped with petrol interceptors in the drainage system to prevent hydrocarbon contaminants reaching sensitive receptors. Through the implementation of mitigation measures outlined in Chapter 6 of this EIAR the magnitude of any impacts from the construction and operational phases of the project are negligible.	Neutral <i>Not Significant</i>
Land and Soils	Water (Hydrology & Hydrogeology)	There is always a potential for localized contamination of soils during construction. This can happen through construction materials leaching into the underlying soils, dewatering or construction related spillages. The construction of the proposed development will be undertaken in accordance with a project specific Construction Environmental Management Plan (CEMP) as a form of mitigation. Adherence to this plan will ensure that the impacts of all short term negative impacts associated with construction are imperceptible and neutral.	Neutral <i>Imperceptible</i>
Land and Soils	Air Quality & Climate	During the construction phase, dust emissions may potentially arise from soil erosion. The mitigation measures outlined, ensure that soil erosion and, dust emissions are appropriately managed and minimised.	Neutral <i>Not Significant</i>

Water (Hydrology & Hydrogeology)			
Water (Hydrology & Hydrogeology)	Land and Soils + Population & Human Health	<p>During the construction phase the following activities may cause a potential impact:</p> <ul style="list-style-type: none"> - Excavation of inert soils and topsoil reducing soil cover (protection) over the aquifer; - Contamination of groundwater by site activities; - Construction vehicles and works vehicles on informal parking areas with no formal drainage or petrol interceptors; - Spillages of construction chemicals to ground; - Poor site environmental management during construction. - Contamination of Ladys well by ingress of soiled water; - Contamination of Clonard Brook by site activities, e.g. poor stockpile management, poor earthworks management, programming in relation to weather conditions <p>To mitigate against the above, the construction of the proposed development will be undertaken in accordance with a project specific Construction Environmental Management Plan (CEMP) as a form of mitigation. Adherence to this plan will ensure that the impacts of all short-term negative impacts associated with construction are imperceptible and neutral.</p>	Neutral <i>Not Significant</i>
Water (Hydrology & Hydrogeology)	Land & Soils	<p>The operational phase will have SUDs features that could allow infiltration of contaminants to the bedrock aquifer or surface waters if not constructed and operated in accordance with best practice. This is a permanent, negative significant impact.</p> <p>Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater. These measures have</p>	Neutral <i>Not Significant</i>

		<p>been incorporated as part of the subject proposal.</p> <p>Communal landscaped areas managed by the development management company should endeavour to limit pesticide use etc. to maintain the integrity of soils.</p> <p>Use of sustainable urban drainage features such as swales etc. should ensure any pathways for contaminants to groundwater are not created. Best practice has been adhered to in design.</p> <p>Continuing maintenance of foul water pipelines by Irish Water or other relevant authority should minimise the potential for sewerage related contaminants to be released to subsoils and or water receptors.</p>	
Water (Hydrology & Hydrogeology)	Population & Human Health	<p>Flooding at the development site is considered to be an unlikely temporary impact. However due to climate change, the topography of the site and the cumulative impact of adjacent proposed developments it is addressed in mitigation measures.</p> <p>The impact of climate change and flash flooding on downstream receptors is addressed in SUDs design to ensure adequate infiltration/retention on site during such events. Coastal flooding does not affect the site and the development is not likely to have an impact on this type of flooding. With regards to fluvial flooding it is important to maintain the natural vegetated channels of the Clonard Brook and its flood plain to ensure development does not create a fluvial flooding problem. There are plans for the Taylors Hill Phase 3 development to allow for this by maintaining a riparian buffer zone along the banks of the brook.</p> <p>The Local Authority or Estate Management Team should ensure fuel interceptors etc. are maintained and that chemical use on public landscaped areas is limited.</p> <p>Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater. Sustainable urban</p>	Neutral <i>Not Significant</i>

		drainage such as swales etc. would alleviate the loss in infiltration area due to the increase in hardstanding.	
Noise & Vibration			
Noise & Vibration	Population & Human Health	<p>Construction noise and vibration sources can temporarily potentially impact on human beings in terms of noise disturbance.</p> <p>The largest noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery and HGV movement to, from, and around the site. However, the construction phase can be classed as a short-term phase.</p> <p>In terms of the potential vibration impact during the construction phase, site activities will be managed so as not to exceed the vibration limits set out in British Standard BS 522802 and summarised in Table 8,2 of this report. Moreover, the mitigation measures set out in Section 8.6.</p> <p>In terms of the potential for noise impact during the construction phase, mitigation measures as outlined in Section 8.6.1 of this EIAR which are also in line with best practice <i>BS 52881: 2009+A1:2014: Code of practice for noise and vibration control</i> on construction and open sites Parts 1 and 2 provide guidance on noise and vibration control in the context of construction.</p>	Neutral <i>Not Significant</i>
Noise & Vibration	Biodiversity	Construction noise has the potential to impact on fauna in terms of temporary disturbance.	Neutral <i>Not Significant</i>
Air Quality			
Air Quality	Population & Human Health	Impacts to air quality can occur at construction and operational phases. The main source of air quality impacts at construction phase will be as a result of fugitive dust emissions from site activities. Should the construction phase of the proposed development coincide with the construction phase of any other development within 350m, then there is potential for cumulative construction dust impacts. A high level of dust control will be implemented across the site which will avoid significant dust emissions. Please see Chapter 9.6.1 for further details in	Neutral <i>Not Significant</i>

		<p>relation to the proposed mitigation measures.</p> <p>When the dust mitigation measures detailed in the mitigation section of this report (9.6.1) are implemented, the residual effect of fugitive emissions of dust and particulate matter from the site will be short term, direct, negative and slight in nature, posing no nuisance at nearby receptors.</p> <p>The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be negative, short term and imperceptible with respect to human health.</p>	
Air Quality	Population & Human Health + Material Assets - Transport	<p>The primary sources of air emissions in the operational context relate to the change in traffic flows in the local area associated with the proposed development.</p> <p>Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the TII REM tool. The modelling assessment determined that the change in emissions of NO₂, PM₁₀ and PM_{2.5} at nearby sensitive receptors as a result of the proposed development will be neutral. Therefore, the operational phase impact to air quality is long-term, localised, neutral, imperceptible and non-significant.</p> <p>Emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are long-term, direct, neutral, imperceptible and non-significant.</p>	Neutral <i>Not Significant</i>
Climate			
Climate	Air Quality	<p>There is a potential for the release of a number of greenhouse gas emissions to atmosphere during the construction of the proposed development. A number of best practice mitigation measures will be implemented on site as documented in Chapter 10.6.1 of</p>	Neutral <i>Not Significant</i>

		this EIAR. There is however no monitoring deemed necessary as part of the construction phase.	
Climate	Air Quality & + Material Assets - Transport + Water	<p>A number of measures have been incorporated into the design of the development in order to mitigate against the impacts of future climate change. For example adequate attenuation and drainage have been incorporated into the design to avoid potential flooding impacts as a result of increased rainfall events in the future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 10.5.3.1).</p> <p>A number of incorporated design mitigation measures that have been incorporated into the design of the development to reduce the impact of climate change wherever possible. These measures are detailed in Section 5.5.3.3 of this EIAR.</p>	<i>Neutral Not Significant</i>
Wind and Microclimate			
Wind and Microclimate	Population and Human Health	<p>The results of the wind and microclimate chapter conclude that the development is mainly dominated by two storey residential development which is currently exposed to wind flows across the open farmland, given that the proposed development does not have any tall buildings, minimal disturbance to wind-flow is expected and no significant impacts on microclimate are predicted.</p> <p>It is predicted that the construction activity will have a neutral, slight and short-term impact. The predicted impacts of the operational phase is neutral, imperceptible and permanent. No mitigation measures are required during the construction or operational phases.</p>	<i>Neutral Not Significant</i>
Material Assets – Transport			
Material Assets – Transport	Population and Human Health	Increased traffic can potentially give rise to safety issues. A road safety audit has been carried out on the proposed development and the recommendations included within same have been incorporated into the proposed design where considered necessary.	<i>Neutral Not Significant</i>

Material Assets – Transport	Air Quality + Climate	<p>Increased traffic flows can give rise to traffic related air quality impacts and effects on human beings. The impact on ambient air quality levels is expected to be imperceptible with no effect anticipated on local residents.</p> <p>In terms of climate change, the proposed development has been designed to encourage cycling and walking by providing routes and the requisite infrastructure. A Mobility Management Plan will be implemented as part of the operational phase.</p>	Neutral <i>Not Significant</i>
Material Assets – Transport	Noise & Vibration	<p>Increased traffic flows can give rise to traffic related noise and effects on human beings. The impact of traffic related noise on the existing ambient sound environment is expected to be imperceptible with no effect anticipated on local residents.</p>	Neutral <i>Not Significant</i>
Material Assets – Utilities			
Material Assets – Utilities	Population and Human Health	<p>A risk to human health of the installer from built services can occur as a result of any excavation work in areas where built services exist, through coming into contact with live electricity lines or damaging live gas mains. Health and safety workers will fall under the remit of the contractors appointed who will be required to comply with relevant Health and Safety legislation.</p> <p>From the perspective of the end user of the networks the risk to human health include:</p> <ul style="list-style-type: none"> - Gas leaks or explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland to ensure the protection of human health. Therefore, the risk of effect on human health is not considered significant. - Loss of supply. This is a managed process that is the responsibility of the individual utility supplier and emergency plans will be in place. The effect is therefore considered brief and not significant. <p>With the implementation of the aforementioned measures, the impact of the proposed built services on human health is likely to be negligible.</p>	Neutral <i>Not Significant</i>

		The proposed development is unlikely to have any significant impact on local water, electricity or gas supply networks and the overall impact with respect to these utilities can be designed as long term and neutral.	
Archaeology, Architectural and Cultural Heritage			
Archaeology, Architectural and Cultural Heritage	Landscape and Visual Amenity	<p>Archaeological features have been identified within or adjacent to the subject site. The presence of such features has guided the location of open space and built form within the development site. All archaeological heritage issues will be resolved by mitigation during the early construction or construction phase, in advance of the operational phase, through one of more of the following:</p> <ul style="list-style-type: none"> - Preservation by record (archaeological excavation); - Preservation in situ; - Preservation by design; and - Archaeological monitoring. <p>Where preservation in situ is proposed, ie preservation by design where the subsurface archaeological remains are protected by a geotextile layer and buried within a green/landscaped area on site.</p> <p>No archaeological monitoring is required post construction.</p>	Neutral <i>Not Significant</i>
Landscape & Visual Impact			
Landscape & Visual Impact	Population and Human Health	It is not considered that the proposed development by virtue of its visual appearance and in the context of the current zoning of the site and the nature of the surrounding landscape, will cause any significant issues for the surrounding residential population. 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 impacts.	Neutral <i>Not Significant</i>
Landscape & Visual Impact	Biodiversity	The proposed landscaping of the site interacts with its biodiversity and ecology through the changes that will occur to the existing habitats and flora at the site. The landscaping proposals	Neutral <i>Not Significant</i>

		will entail losses and contributions in terms of vegetation at the site, which will in turn affect the ecology of the site. The site in its current condition is not considered to be of high ecological value and the propose landscaping will not result in significant adverse effects in this regard.	
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16.4 Cumulative Impacts

The cumulative effects with other and/or approved projects in the area have also been considered to determine whether these could be sufficient to generate impacts of significance on the environment. Any predicted specific cumulative impacts are outlined in the various EIAR chapters and tend to be temporary; related to the construction period; and manageable by way of mitigation. No significant interactions are envisaged in terms of interactions arising from cumulative impacts.

16.5 'Do Nothing' Scenario

If the proposed project does not proceed, there will be no cumulative impacts arising.

16.6 Mitigation and Monitoring Measures

It is not proposed that any mitigation or monitoring will be undertaken specifically for cumulative impacts.

17.0 MITIGATION AND MONITORING MEASURES

17.1 Introduction

This section of the EIAR has been prepared by Hughes Planning and Development Consultants in association with the various EIAR consultants. More specifically, this chapter of the EIAR was prepared jointly by Mrs. Muireann Coughlan, Associate, and Ms. Danielle O'Leary, Senior Planner with Hughes Planning and Development Consultants.

Mrs. Muireann Coughlan graduated with honours from University College Cork with a Masters in Planning and Sustainable Development (MPLAN) in 2010, having previously completed a joint honours Bachelor of Arts degree in Geography and Sociology. She has also completed a Post Graduate Certificate in Design Management. Muireann is currently an Associate with Hughes Planning and Development Consultants. Prior to this, she worked in local government and private consultancies in both Ireland and the United Kingdom. Muireann has 13 years of experience in the field of planning, which has included providing consultancy services in respect of several major residentially-led projects. Muireann is a Full Member of the Royal Town Planning Institute (RTPI) and Corporate Member of the Irish Planning Institute (IPI).

Ms. Danielle O'Leary of Hughes Planning and Development Consultants, graduated with honours from University College Cork (UCC) with a Masters in Planning and Sustainable Development (MPLAN) in 2018, having previously completed a Bachelor of Science Degree in Earth and Environmental Systems Sciences from University College Cork (UCC) in 2016. Danielle has over 5 years professional experience in the field of planning and development consultancy, which has included providing consultancy services in respect of several major residentially-led projects, including EIA. Danielle is currently a Senior Planner in the practice of Hughes Planning and Development Consultants and is a member of the Irish Planning Institute (IPI).

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 sets out a summary, for ease of reference, of the measures outlined within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring during the construction and operational phases of the proposed development. All measures included below form part of the proposed development and will be implemented in full.

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.

17.2 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.

17.2.1 Human Beings, Population and Health

Construction Phase

All standard health and safety procedures will be implemented at every stage of this project. The Main Contractor for the project is responsible for the method in which the construction works are carried out and to ensure that best practices and all legal obligations including Local Authority requirements and Health and Safety legislation are complied with. Further to this, Building Regulations will also be adhered to during the construction phase. The health and safety procedures are set out in the Construction and Environmental Management Plan which will provide a mechanism for the implementation of the construction mitigation measures set out within the EIAR.

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics discussed under each. These measures

seek to ensure that any likely significant adverse environmental impact on human health during the construction phases are either ameliorated to have an acceptable level of impact or avoided altogether. Included in these measures is the requirement that a detailed construction traffic management plan be prepared by the Contractor and agreed with Fingal County Council as the Road Authority prior to commencing works on the public road. This Construction Traffic Management Plan will include restrictions on deliveries and access to the construction site. Further, measures with regards to noise and dust abatement covered elsewhere within this EIAR will be implemented during construction and will limit impacts on population and human health. The measures set out within the Construction Environmental Management Plan and Operational Waste Management Plan will be strictly adhered to.

Further to the above, working hours on site will be as such that the residential amenity of adjacent residences is not unreasonably impacted upon. They will be agreed with the Council in full as part of the required construction management plan.

As a result of the implementation of the abovementioned measures, the impacts of the construction phase of the development on population and human health are not anticipated to be significant and will have an imperceptible and neutral impact in terms of health and safety. Furthermore, all impacts will be temporary in nature.

Operational Phase

The proposed development has been designed to avoid negative impacts on population and human health through the inclusion of landscaping, the provision of a creche, provision of energy efficient measures and through high quality finishes and materials. The mitigation measures relating to the operation phase of the development concerning traffic, transport, noise, vibration, water, air and dust quality and landscaping as set out in this EIAR will be carried out in full to minimise impacts on residents of the development, adjacent residents and human health.

Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be condition of any permitted development. There is no other ongoing monitoring required in relation to the effect of the proposed development on the population and human health.

17.2.2 Biodiversity

Construction Phase

- A project ecologist will be appointed to oversee all works.
- Onsite drains 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.
- Stockpiling of loose materials will be kept to a minimum of 40m from drains.
- 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, 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.

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 apartments 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. Upon moving in, residents within the apartment blocks in the vicinity of the apartments will be provided with an information pack in relation to the sensitivities of the swallows.

Monitoring

Construction Phase Monitoring

During the construction phase a project ecologist will oversee works on site. As part of the operational phase, a project ecologist will oversee works on site including the lighting. Landscape, bird mitigation and drainage works.

17.2.3 Lands and Soil

Construction Phase

Prior to the commencement of development, a project specific Construction Environmental Management Plan (CEMP) will be prepared and submitted to the planning authority for approval. It should address the cumulative impacts of this proposed development in conjunction to the Taylors Hill Phased development.

It will be maintained, and the procedures implemented by the contractor for the duration of the construction period. It will manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages. All site personnel will be trained in the implementation of these procedures as part of the site induction process.

The CEMP will adhere to best practice and consider site specific issues such as;

- Earthworks operations shall be carried out subject to a soil management plan which will outline where topsoil to be re-used on site and find suitable re-use for this finite resource at offsite locations. The construction will be phased, which allows topsoil management and soil protection from run-off as site is stripped in stages. The use of environmental degrading or persistent chemicals to remove vegetation from the site will not be permitted. Topsoil shall not go to landfill or similar disposal routes. It will be managed to prevent run-off of soil sediment with diversion of clean surface water around the stockpiles. A minimum stockpile height of 2m high will be enforced and vegetation will be encouraged to stabilise the piles. Silt fencing will be placed around each stockpile.
- Good housekeeping – waste management, chemical storage and use, adequate covered car parking to ensure hydrocarbons do not leach into expose soils from leaking vehicles etc; double walled tanks, bunded areas and spill control systems.
- Maintenance of plant and machinery to ensure fuels and chemicals associated with these do not find their way into soils and groundwater;
- Waste management - Materials management to ensure surplus materials and packaging is not buried under buildings and topsoil;
- Waste Management – Any materials that cannot be re-used, recycled or avoided to be generated will be disposed to a waste management site. All paperwork including waste consignment notes will be recorded and filed in addition to the NWCPOL licence of the receiving waste management facility and the NWCPOL licence of the haulier. Waste streams must be segregated on site.
- Chemical and Fuel Storage- To be bunded and spill kits to be available on site.
- The cut & fill assessment has been carried out based on the existing ground levels and proposed ground levels, it has assumed that all top soil will be retained on site for landscaping, tree pits, gardens and other landscape works to open spaces. It has been assumed that up to 20% of the cut material will not be suitable for reuse on site (bounders, soft clay / silts, or material with high moisture content).
- Taking account of the cut & fill volumes noted below and the assumption of 20% cut material will have to be disposed of offsite and all top soil retained on site this means that the Net Fill volume increases to 55,270m³, this is less than the volume of imported aggregates, concrete and other hardstanding surfaces that are anticipated to be required for the construction phase of the project, hence there will be no requirement for imported fill other than construction based aggregates required for the works.
- The site design does not currently require slope stabilisation. In the event that this changes a specialist Geotechnical Engineer will assess and design any slope or retaining features.

The above protocols should be audited on a monthly basis as part of the environmental health and safety site audit carried out by the main contractor. The results of which should be provided to the local planning authority. If the above is adhered to this will ensure that the impacts of all short term negative impacts associated with construction are imperceptible and neutral.

Operational Phase

Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater.

Communal landscaped areas managed by the development management company should endeavour to limit pesticide use etc to maintain the integrity of soils.

The impact of soil sealing will be mitigated against by the use of sustainable urban drainage features such as swales etc.

Design should encourage the redistribution of topsoil to garden and communal landscaping areas where practical.

Continuing maintenance of foul water pipelines by Irish Water or other relevant authority should minimise the potential for sewerage related contaminants to be released to subsoils.

Cumulative impacts of the adjacent Taylors Hill & Ladywell development in conjunction with this one should be considered in relation to soil stripping and prevention of sediment run-off into water courses. Silt/sediment interceptors/barrier should be set up to safeguard the Clonard Brook against run-off.

The Local Authority or Estate Management Team should ensure fuel interceptors etc. are maintained and that chemical use on public landscaped areas is limited.

Monitoring

Construction Phase Monitoring

The construction phase will be monitored, in particular in relation to the following;

- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road sub-formation level in advance of placing capping material, stability of excavations etc.);
- Inspection of fuel / oil storage areas;
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities;
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill; protection of soils from contamination for removal from site);
- Soil removed during the construction phase will be monitored to maximise potential for re-use on site;
- Protection of topsoil stockpiled for re-use;
- Adequate protection from contamination of soils for removal;
- Cleanliness of adjoining road network;
- Prevention of oil and fuel spillages;
- Dust control;
- Representative soil samples will be taken of the excavated material to confirm its suitability for re-use on the site and/or to facilitate classification for removal off site;

Monitoring of groundwater and surface water is also recommended for the construction phase to demonstrate compliance.

Operation Phase Monitoring

The onsite SUDs will be maintained and inspected on a regular basis as per the design requirements. This is discussed in further detail in Chapter 7.0 Water of the EIAR.

17.2.4 Water

Construction Phase

Prior to the commencement of development, a project specific Construction Environmental Management Plan (CEMP) will be prepared and submitted to the planning authority for approval. It should address the cumulative impacts of this proposed development in conjunction to the Taylors Hill and Ladywell Phased development.

It will be maintained, and the procedures implemented by the contractor for the duration of the construction period. It will manage all polluting activities likely to occur on site and include emergency response plans for environmental incidents e.g. hydrocarbon spillages. All site personnel will be trained in the implementation of these procedures as part of the site induction process.

The CEMP will adhere to best practice and consider site specific issues such as;

- Permeable haul roads and car parking will be located where possible outside the zones of high and extreme groundwater vulnerability i.e. southwest of the site;
- The Clonard Brook is 600m off site and therefore no direct mitigation measures are required for the works at the proposed development site;
- Refuelling on site to be in designated area only and to be mindful of the areas of high to extreme groundwater vulnerability areas when setting up site compounds i.e. no refuelling zones/chemical storage to be in these areas;
- Earthworks operations - The construction will be phased, which allows topsoil management and soil protection from run-off as the site is stripped in stages. The use of environmental degrading or persistent chemicals to remove vegetation from the site will not be permitted. It will be managed to prevent run-off of soil sediment with diversion of clean surface water around the stockpiles.
- Good housekeeping – waste management, chemical storage and use, adequate covered car parking to ensure hydrocarbons do not leach into exposed soils from leaking vehicles etc.; double walled tanks, bunded areas and spill control systems.
- Maintenance of plant and machinery to ensure fuels and chemicals associated with these do not find their way into soils and groundwater;
- Waste Management – solid or liquid wastes not to be allowed to enter surface waters;
- Chemical and Fuel Storage - to be bunded and spill kits to be available on site. Training of operatives in their use.
- Identification and removal/blocking of any land drains leading toward Lady's well.
- Creation of soil bund or installation of silt fence in a sufficient arc to eliminate any overland flow towards Lady's well.
- The site design does not currently require slope stabilisation. In the event that this changes a specialist Geotechnical Engineer will assess any groundwater management issues.

The above protocols should be audited on a monthly basis as part of the environmental health and safety site audit carried out by the main contractor. The results of which should be provided to the local planning authority. If the above are adhered to, this will ensure that the impacts of all short term negative impacts associated with construction are imperceptible and neutral.

Operational Phase

Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater.

Communal landscaped areas managed by the development management company should endeavour to limit pesticide use etc. to maintain the integrity of soils.

Use of sustainable urban drainage features such as swales etc. should ensure any pathways for contaminants to groundwater are not created. Best practice has been adhered to in design.

Continuing maintenance of foul water pipelines by Irish Water or other relevant authority should minimise the potential for sewerage related contaminants to be released to subsoils and or water receptors.

Cumulative impacts of the adjacent Taylors Hill & Ladywell developments in conjunction with this one should be considered. The developments will result in the creation of an impermeable area on a hill and a reduction of area for precipitation infiltration. The impact of climate change and flash flooding on downstream receptors should be addressed. This is addressed in SUDs design to ensure adequate infiltration/retention on site during such events. Coastal flooding does not affect the site and the development is not likely to have an impact on this type of flooding. With regards to fluvial flooding it is important to maintain the natural vegetated channels of the Clonard Brook and its flood plain to ensure development does not create a fluvial flooding problem. There are plans for the Taylors Hill Phase 3 development to allow for this by maintaining a riparian buffer zone along the banks of the brook.

The Local Authority or Estate Management Team should ensure fuel interceptors etc. are maintained and that chemical use on public landscaped areas is limited.

Standard practice in drainage design would require the inclusion of fuel interceptors in the drainage system to ensure hydrocarbons are not discharged to surface waters and groundwater. Sustainable urban drainage such as swales etc. would alleviate the loss in infiltration area due to the increase in hardstanding.

Monitoring

Construction Phase

Where possible groundwater monitoring installations should be maintained for the construction period to allow monitoring of groundwater quality for the following parameters:

- Extractable Petroleum Hydrocarbons
- Ammonia
- Nitrate
- Nitrite
- Orthophosphate
- Sulphate
- Calcium
- Lead
- Nickel
- Arsenic

These installations should be decommissioned in line with best practice to ensure no permanent pathway to the aquifer is allowed to remain once the construction phase is complete.

The onsite drainage network (potable supply and foul) and suitable drainage features will be maintained and inspected on a regular basis as per the manufacturer's requirements.

Operation Phase Monitoring

The onsite SUDs and drainage network will be maintained and inspected on a regular basis as per the design requirements. This is discussed in further detail in Chapter 7.0 Water of the EIAR.

17.2.5 Noise and Vibration

Construction Phase

In Section 8.5.1 of this EIAR, a likely significant impact was identified at the residential properties to the east of the proposed development. The following measures will be employed to mitigate this. These measures are also best practice regardless of identified significant impacts.

BS 5228-1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites Parts 1 and 2* provide guidance on noise and vibration control in the context of construction. The control of noise from construction works can be divided into two categories:

- Controlling the noise at source, and;
- Controlling the spread of noise.

Mitigation measures that will be employed in order to control construction noise at its source include the following:

- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise;
- Minimise drop height of materials;
- Start-up plant and vehicles sequentially rather than all together;
- The normal operating hours of the site will be adhered to. This also applies to the movement of plant onto and around the site;
- The plant and activities chosen to carry out the construction work will be the quietest available means of achieving the required purpose;
- Modifications may be made to plant and equipment, if appropriate, for noise attenuation purposes, provided the manufacturer has been consulted. For example, a more effective exhaust silencer may be fitted to a diesel engine;
- As far as is reasonably practicable, sources of significant noise will be enclosed provided that ventilation and potential hazards to operators have been considered;
- Plant and noisy activities will be located away from noise-sensitive areas where practicable and sources of directional noise should be oriented away from noise-sensitive areas;
- All plant and equipment will be regularly maintained (increases in plant noise are often indicative of future mechanical failure).

Mitigation measures that will be employed in order to control the spread of construction noise include the following:

- The distance between noise sources and noise-sensitive areas will be increased as much as is reasonably practicable;
- Where noise control at source is insufficient and the distance between source and receiver is restricted, screening will be implemented. The location of barriers providing screening is an important consideration. Barriers will be located wither close to the source of bouse (as with stationary plant) or close to the listener. The height of the barrier must also be considered. BS 5228-1 states that an approximate attenuation of 5 dB is achieved when the top of the plant is just visible to the receiver over the noise barrier, while an attenuation of 10 dB is achieved when the noise screen completely hides the sources from the receiver. A barrier height will be chosen so as to completely hide the source. Furthermore, where the noise source is 1m from the façade of a building, an allowance of +3 dB will be made for reflection.

Mitigation measures that will be employed in order to control vibration from construction works, with reference to BS 5228-2, include the following:

- The plant and activities chosen to carry out the construction work will be chosen to cause as little vibration as possible while achieving the required purpose;

- All plant and equipment will be regularly maintained to reduce unnecessary vibration;
- Activities causing significant vibration will be located away from sensitive areas and/or isolated using resilient mountings where practicable.

Operational Phase

Building Services Plant Noise

At the detailed design stage, best practice measures relating to building services plant will be taken to ensure there is no significant noise impact on noise-sensitive locations within the development. Due to the relative proximity of the NSLs within the development, this will also prevent a negative impact on NSLs in the surrounding area. Best practice measures in this context include the following:

- Where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required, to reduce noise breakout;
- Ventilation plant serving plant rooms and car parks will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment;
- The use of perimeter plant screens will be used, where required, for roof-top plant areas to screen noise sources;
- The use of attenuators or silencers will be installed on external air-handling plant;
- All mechanical plant items, e.g. fans, pumps etc., shall be regularly maintained to ensure that excessive noise generated by 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;
- Installed plant will have no tonal or impulsive characteristics when in operation.

Deliveries and Waste Collection

Based on the assessment in Section 8.5.3, it is not expected that deliveries and waste collections are likely to cause a significant impact. Therefore, no mitigation measures are necessary in this case.

Additional Traffic on Surrounding Roads

As explained in Section 8.5.2, it is considered that the changes to traffic flows for this development will not result in a significant increase in noise level in the surrounding environment. Therefore, no mitigation measures are necessary in this case.

Monitoring

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion.

Noise monitoring should be conducted in accordance with the International Standards ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

17.2.6 Air Quality

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

demolition, earthworks, construction and trackout activities (see Section 9.5.1.1). Therefore, the following dust mitigation measures shall be implemented during the construction phases 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. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). Specific attention has been given to the measures required by Dublin City Council in their document *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension, therefore, mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.

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 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 Vehicles / 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 kph 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

- Prior to demolition blocks should be soft striped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- During the demolition process, water suppression should be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays/local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment should be minimised, if necessary fine water sprays should be employed.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

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 overflowing 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

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Street and footpath cleaning must be undertaken during the ground works phase to minimise dust emissions. This can be carried out using water-assisted dust sweeper(s). If sweeping using a road sweeper is not possible due to the nature of the surrounding area, then a suitable smaller scale street cleaning vacuum will be used.
- 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 bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Operational Phase

No mitigation is proposed for the operation phase of the proposed development as it is predicted to have a neutral and imperceptible impact on air quality.

Monitoring

Construction Phase

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the demolition and ground works phases of the proposed development is required 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). The following monitoring measures are also noted:

- 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 demolition and ground works phases of the proposed development is required 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).

Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality are predicted to be neutral and imperceptible

17.2.7 Climate

Construction Phase

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- 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.
- Power for the construction site will be sourced from the existing facility which is powered by renewable sources.

Operational Phase

A number of measures have been incorporated into the design of the development in order to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 10.5.3.1).

A number of incorporated design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Full details of these measures are outlined within the Energy Statement and Building Lifecycle Report prepared in relation to the development. These measures are detailed in Section 10.5.3.3. These measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals of the Climate Change Action Plan.

Monitoring

There is no monitoring required for the construction or operational phase of the development.

17.2.8 Wind and Microclimate

Construction Phase

No mitigation measures are required during the construction phase.

Operational Phase

No mitigation measures are required during the operational phase.

Monitoring

No cumulative impacts are predicted and as such there is no monitoring recommended for the construction or operational phase of the development.

17.2.9 Material Assets – Transport

Construction Phase

An Outline Construction Traffic Management Plan (CTMP) has been prepared by MPA Consulting Engineers and is attached as **Appendix 12.4** of this EIAR.

The Outline CTMP address construction phasing and measures that can be adopted to minimise any effects on road users.

Post planning, a detailed Construction Traffic Management Plan will be prepared by DSPH expanding on the preliminary plan, and the document will be submitted for approval to Fingal County Council Road prior to the commencement of any construction works.

This plan 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.

To minimise disruption to the surrounding environment, the following mitigation measures will be implemented:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths, and roads;
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel;
- A dedicated 'construction' site access / egress junction will be provided to Boulevard Road during the construction phase;
- Provision of adequate on-site parking and compounding to ensure that there is no overflow of construction traffic / parking onto the local network;
- Site offices and compound will be located within the site boundary. The site will be able to accommodate employee and visitor parking throughout the construction period;
- A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas;
- A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;

- Dedicated construction haul routes will be identified and agreed with the local authority prior to the commencement of constructions activities;
- Truck wheel washes will be installed at the site entrances if deemed necessary and any specific recommendations with regard to construction traffic management made by the Local Authority will be adhered to; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. from the site will be removed off site.

DSPH will be required to 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 impacts of the construction phase can be appropriately managed.

Operational Phase

Balbriggan provides suitable infrastructure and transport services to enable travel by sustainable modes. 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 Mobility Management Plan Framework has been prepared by MPA Consulting Engineers for the Malincross development (reference document 191004-MMP). This has been included as **Appendix 12.6** of this EIAR.

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.

A robust Framework can play a significant role in reducing the transport impacts of a development, though critical to its success is the commitment of residents, the local authority, and other interested parties to ensuring its implementation and progress.

Monitoring

No monitoring is proposed.

17.2.10 Material Assets – Utilities

Construction Phase

The following mitigation measures are proposed for the construction phase of the proposed development with reference to Material Assets;

- The proposed development should comply with the procedures set out in the Construction and Operational Waste Management Plan with respect to construction waste;
- A Construction Environmental Management Plan (CEMP), including traffic management, should be produced and executed by the contractor for the construction phase. The purpose of this is to protect local amenities and maintain the integrity and operation of the local road network during the construction phase;
- A Construction Traffic Management Plan (CTMP) subject to approval by the Local Authority will be produced and adhered to. The CTMP will provide details of intended construction practice for the development, including – (a) Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse, (b) Location of areas for construction site offices and staff facilities, (c) Details of site security fencing and hoardings. (d) Details of the timing and

routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site, (e) Measures to obviate queuing of construction traffic on the adjoining road network (f) Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network (g) Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works. The CTMP will be agreed with both Fingal County Council and An Garda Síochána, prior to commencement of works;

- The Construction Environmental Management Plan details appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels. (a) Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater. (b) Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil. (c) Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.
- It has been found from the Flood Risk Assessment that the site is not subject to pluvial, fluvial or tidal flooding and is a Zone C site. As good practice however surface water drainage will require maintenance and upkeep to prevent pluvial flooding that may occur as a result of negligence/poor maintenance of the stormwater management system.
- An operation and maintenance manual for all surface water/foul should be provided by the contractor upon completion of the construction phase. This should detail all operational and maintenance aspects of the surface water drainage systems and is to be agreed with Fingal County Council prior to its implementation. This includes inspecting and maintaining the petrol interceptors, Hydrobrakes, attenuation devices, etc.
- Connection to the foul sewer will be gradual over-time due to phased nature of the works. Capacity of Irish Water's downstream network to accept the loading from the development must be assessed on an ongoing basis through-out the construction of the development. Irish Water have agreed to undertake this assessment. Connections will be agreed with Irish Water prior to connecting to the foul sewer network;
- The location of all implemented services should be provided to the utility providers to update their records and allow accurate locating and understanding of the services for any future upgrades; and
- Provision of utilities should be carried out in accordance with the recommendations of the relevant utility providers (ESB, Gas Networks Ireland, Virgin Media, Irish Water/Fingal County Council etc).
- Demolition will be carried out with regard to the EPA's Best Practice Guidelines for the Preparation and Resource and Waste Management Plans for Construction and Demolition Projects.

Operational Phase

The surface water drainage system including the SUDs is to be regularly maintained to ensure components such as petrol interceptor and hydrobrakes remain effective. Grass on swale areas it to be cut to an appropriate length. Rain gardens and bio retention tree pits to be maintained.

Plant and machinery including cars should not be permitted to travel on infiltration areas to avoid over compaction and potential for leaking of hydrocarbons direct to permeable ground surface.

Persistent pesticides should not be used on site to ensure surface water run-off is not impacted by organophosphates and other chemicals.

Monitoring

Monitoring measures will be in accordance with provisions outlined elsewhere in this EIA document. Surface water drainage works should be overseen by Fingal County Council relative departments.

Foul sewer construction works will be monitored by Irish Water connections department. Water supply construction works will be monitored by Irish Water connections department.

Execution of the construction and environmental management plan during the construction phase must be monitored by the local authority.

Execution of the operation and maintenance requirement outlined in the operation and maintenance manual for the development must be monitored by the local authority.

17.2.11 Archaeology, Architectural and Cultural Heritage

Construction Phase

General

All surviving archaeological areas which have been identified within this EIA chapter and depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIA will be protected from construction activities with the provision of fencing and signage. These areas will not be used for compounds, storage of material or spoil, or any other construction related activity which could impact the below-ground remains. They will be integrated into completed conservation plans.

It should be noted, however, that Site 3/1 (linear and curvilinear features) extends outside of the proposed development site to what is now a park, and has consequently already been disturbed. Similarly, Site 9/2 has been disturbed by the haul road from Boulevard Road.

Although the holy well (RMP DU001-004) is outside of the proposed development, it occupies a narrow space between the proposed Distributor Road and PO1. Robust fencing (post and wire) and signage will be required in this location to protect it from demolition activities and construction traffic.

The construction programme will allow sufficient time for excavation of sites and features which cannot be avoided.

Preservation in-situ

The proposed development site has been designed to facilitate preservation in-situ of the field system (SMR DU001-023) and enclosure (SMR DU001-015) beneath a public open space (PO4). The main concentration of features of this complex will be preserved with a buffer zone of 10-20m extending from the edge of the archaeology. Consultation with the design team has taken place to develop a methodology for the landscaping of this park which will not impact the subsurface features (See Chapter 15.0 of this EIA). Archaeological features will be protected with the use of geotextile over the existing ground surface, with made ground across the area and low mounding for tree planting. Any works in this area will be under archaeological supervision (See Section 14.7.1.5). Signage describing the archaeological remains will also enhance the public amenity.

The impact from the proposed Distributor Road to peripheral features on the southwest corner of this complex cannot be avoided. Similarly, geophysical survey detected peripheral anomalies to the north of the main concentration. These areas will be preserved by record (See Section 14.7.1.3).

The proposed development site has been redesigned to move the grass pitch which will facilitate preservation in-situ of the double-ditched enclosure (SMR DU001-033). The site will be preserved under geotextile in a green space with a buffer zone of 10m from the outer edge of the monument. Signage

describing the archaeological remains will enhance the public amenity.

Preservation by Record

Excavation (preservation by record) will take place for all subsurface archaeological features which cannot be avoided by the proposed development, as depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR. This includes the southwest periphery of the field system (SMR DU001-023) where impact from the proposed Distributor Road cannot be avoided, and an area to the north of the main concentration where Test Trenches 10 and 11 and the geophysical survey results suggest further peripheral features are located.

It is also proposed to excavate two SMR sites (DU001-022001, Pits; DU001-022002, ditches) which will be impacted by the development.

The SMR record DU001-026 (Excavation – miscellaneous) is actually Elliott's Site 7/1 which comprises pits and possible structural features. It appears to have been a small scale site as Connell (2008; Licence no.: 08E1155) did not identify any features on stripping part of the site. The entirety of the site will be stripped and excavated, which will allow a fuller understanding of the nature of the site.

All other sites are dispersed and ephemeral comprising pits and ditch-/gully-type features (Site 3/2, Site 4/1, Site 4/2, Site 5/1, Site 8/1, Site 8/2). They are depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR and will be similarly excavated in advance of development.

All excavations will be carried out under licence from the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH).

Written and photographic records will be made of the townland boundaries and of the farm shed (BH2) prior to any construction or demolition works.

Further Investigation

There are two areas which merit further investigations to determine a suitable mitigation strategy as depicted on the cultural heritage mitigation maps in Appendix 14.5 of this EIAR. These comprise the ditch-/gully-type features which were identified in Test Trenches 4, 5, 6 and 8 by McLoughlin (2021; Licence no.: 21E0298), and an area of geophysical anomalies which were detected by Nicholls (2005; Licence no.: 05R0137) within the ZoN of an enclosure (SMR DU001-027).

These areas will be topsoil stripped under archaeological supervision and under licence from the DHLGH. This will determine the nature and extent of any potentially archaeological features. If they are established to be archaeological, they will be appropriately excavated or preserved by record under licence from the DHLGH.

Operational Phase

Archaeological Mitigation

All archaeological heritage issues will be resolved by mitigation during the early construction or construction phase, in advance of the operational phase, through one or more of the following:

- Preservation by record (archaeological excavation);
- Preservation in situ;
- Preservation by design; and
- Archaeological monitoring.

Where preservation in situ is proposed, i.e. preservation by design where the subsurface archaeological remains are protected by a geotextile layer and buried within a green/ landscaped area on site. This activity will take place under archaeological supervision. These areas will require ongoing maintenance

and oversight by an archaeologist to ensure that no inadvertent damage occurs to the in-situ protected archaeological features. This is where signage is useful to alert people to the location and nature of in situ remains, so they are fully understood and no inappropriate activity take place in the future. Consultation with the Heritage Officer for Fingal will provide advice as to the necessary archaeological measures required if these areas have to be disturbed/ excavated in the future.

Re-use of Stone

It is recommended that the stone from the demolition of the farm shed (BH2), which includes dressed quoin stones, be re-used within the development. This use of local material with a cultural heritage interest will enhance the public realm for the proposed development.

Monitoring

Construction Phase

Archaeological Monitoring

Archaeological monitoring of all topsoil stripping will be undertaken across the development, and under licence from the DHLGH. This will include the vicinities of Sites 3/1 and 9/2 which have been partly or wholly destroyed by previous construction-related activities. Given the quantity of sites identified through testing of this area, it is likely that archaeological monitoring will reveal further dispersed and small scale sites and / or features which have not been detected through previous investigations. Programming will allow for appropriate monitoring and any subsequent mitigation required. This could be in the form of preservation in-situ or full archaeological excavation (preservation by record).

Although they will be preserved in-situ, works will be required to lay geotextile and create made ground at the field system and enclosure (SMR DU001-023, DU001-015) and the double-ditched enclosure (SMR DU001-033). Works will also take place adjacent to the holy well (RMP DU001-004). All works in these areas will be subject to archaeological monitoring.

All recommendations in this chapter are subject to approval of the National Monuments Service of the DHLGH and the National Museum of Ireland.

Operational Phase

There will be no requirement for monitoring post-construction.

17.2.12 Landscape and Visual Impact

Construction Phase

Mitigation measures during the temporary and short-term construction stage include the following:-

- Retention of boundary vegetation and erection of screen hoarding;
- Time deliveries outside of peak hours;
- Minimise hedgerow and tree removal; and
- Control of disturbance including dust, mud, noise, lighting.

The subsoils and topsoil are to be retained on site and reused to ensure no requirement for moving material off site.

The hedgerows will be managed to remove dead, dying and dangerous branches and any colonising scrub or brier. For retained trees and hedgerows, the recommendations given in *BS5837:2012 Guide for trees in relation to construction* will be adopted to ensure site and tree safety.

Operational Phase

The proposed development includes extensive planting with 829 no. native and ornamental tree species to create a natural environment with colour and seasonal interest. The planting of semi-mature trees will give instant impact and provide enclosure and screening. A green core connects parks and open spaces and runs from the entrance through the development and provides connections to the residential areas to the east towards Balbriggan. Tree lined avenues, planted embankments, pocket parks, orchard tree planting will create an attractive urban development.

Across the site are nine areas of key public open space which have capacity and scale to accommodate informal and various amenity and landscape / parkland areas. These are 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 main spine road leading into the development will be planted with street trees in broad grass verges to create a strong green link through the development for motorists, cyclists and pedestrians;
- Public and Communal Open Space includes extensive planting with a mix native and ornamental tree species to create a natural environment with colour and seasonal interest. The general principle will correspond with Development Plan Objectives in terms of Open Space provision with recreational and amenity spaces set throughout the site offering residents various parks and parkland areas. Public spaces will feel welcome to all, while communal spaces will be differentiated from the public areas either physically or perceptively;
- Biodiversity and habitats creation or enhancement will be the objective in terms of landscape design to the site edges;
- The planting of semi-mature trees will give instant impact and provide enclosure and screening. High canopy trees or ones that will be easy to manage in terms of such will be used along avenues to ensure vehicular sightlines are retained;
- Green links connects peripheral parks and internal open spaces including tree lined avenues, planted embankments, pocket parks, and ecology / biodiversity areas. The connectivity will include set out walking or running trails across the site that can connect on to adjacent lands;
- Provision of playgrounds to cater for the recreational and educational requirements of children of residents;
- The open spaces are designed with consideration given to long-term management ensuring this is not onerous with heavy resource requirements; and
- Due regard is given to coordinating with engineers in terms of Sustainable Urban Drainage Systems (SuDS) with the landscape designs working around required swales, compensation areas and retained watercourses or culverts.

Landscape Mitigation

As noted above, within the core of the Application Site, there is very limited existing landscape features or vegetation of note or worthy of retention with field patterns subject of historical disruption and hedgerows being of limited landscape (or ecological) interest. It is the design intention to ensure that peripheral hedgerows and some internal hedgerows (equating to 58% of all hedges on this site) and associated trees are retained intact and augmented as part of this proposal.

The objectives include creation of different landscape treatments including avenue tree types and boundary treatments to create identifiable character zones. The works will include:-

- Tree lined avenues;
- Provision of pathway network to provide a safe and traffic-free environment for walkers, runners and cyclists;
- Landscape areas will be retained and enhanced towards the site boundary and throughout the site to allow for connected habitat creation and wildlife corridors. On-going open space

management plans will identify areas that can be managed to encourage habitats creation as the designed landscape matures and evolves;

- The proposed layout includes significant public open space and multi-functional public realm areas which are interconnected by landscaped links that have both a functional connection and aesthetic purpose. The main open spaces will have a mix of informal and formal landscape character with recreational and amenity spaces. Each area of public space has a particular landscape character and design to give them a distinct or notable sense of place;
- All age groups will be catered for with the layout and design of open spaces based on best practice in terms of universal design to be safe and aesthetic areas that will complement interaction between varied groups. 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);
- 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 realm areas, communal and private spaces. Public spaces will feel welcome to all, while communal spaces will be differentiated from the public areas either physically or perceptively; and
- Open spaces are designed with consideration given to their long-term management ensuring this is not onerous with heavy resource requirements

The extent of structure planting, amenity planting, garden trees, hedgerows and wooded belts will enhance the overall wooded character and nature of the site and contribute to ecology comparative to the current situation.

Monitoring

The management of all 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 exist and have 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.