ENVIRONMENTAL IMPACT ASSESSMENT REPORT
VOLUME 2 – MAIN REPORT

LARGE SCALE RESIDENTIAL DEVELOPMENT (LRD) AT
DALGUISE HOUSE MONKSTOWN ROAD, MONSKSTOWN, BLACKROCK, COUNTY DUBLIN

PREPARED FOR:

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Contents

1.0 INTRODUCTION

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) relates to a Large Scale Residential Development (LRD) application by the GEDV Monkstown Owner Limited [1] (referred to as the Applicant throughout) for the redevelopment of lands at Dalguise House (Protected Structure RPS No. 870), Monkstown Road, Monskstown, Blackrock, County Dublin, A94 D7D1; and the lands including A94 N3A1 Garage; A94 R9T1 Gate Lodge; A94 TP46 Dalguise Lodge (No. 71 Monkstown Rd); A94 V6V9 White Lodge; and on-street car parking in front of Nos. 6 and 7 Purbeck (A94 C586 and A94 HT99, respectively), with the provision of vehicular and pedestrian access and egress at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck.

This EIAR provides an assessment of the environmental impact and associated mitigation measures arising as a result of the proposed development. It has been prepared in accordance with the requirements of the *Planning and Development Act 2000* (as amended), the *Planning and Development Regulations 2001* (as amended) and the relevant guidance documents.

The LRD application site measures c.3.58 ha and it lies on an existing residential property within the built-up area of Monkstown approximately 1.5 km west of Dún Laoghaire town centre and c. 1.5 km southeast of Blackrock village. The proposed LRD comprises 491 No. residential units, consisting of 484 No. new build and 7 No. residential units within existing structures (the latter repurposed from Dalguise House, Gate Lodge and Coach House).

The residential provision will comprise 3 No. two storey 3-bed terraced houses (GFA 569 sq m), and 488 No. Build-to-Rent units (consisting of 2 No. studio units; 288 No. 1-beds; 32 No. 2-beds/3 persons; 153 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

Vehicular and pedestrian access and egress is provided at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck. Alterations will be made at Purbeck including the relocation of 4 No. existing car parking spaces to facilitate the construction of a new vehicular and pedestrian bridge over the Stradbrook Stream.

1.2 The Applicant

The Applicant, GEDV Monkstown Owner Limited is the legal owner of the lands and will operate the proposed scheme as part of the Greystar group. The ownership boundary is illustrated on the Site Location Plan (Dwg. No. MKS-RAU-XX-DR-AR-0001) prepared by Reddy Architecture + Urbanism (Reddy A+U)

[1] 3rd Floor, Kilmore House, Spencer Dock, Dublin 1.

1.3 The Proposed Project

The 'Proposed Project' for the purposes of this EIAR is the Large-Scale Residential scheme detailed in Chapter 5 of this EIAR.

An extract from the Site Location Plan, prepared by Reddy A+U is provided below and illustrates the red line boundary in respect of the proposed project.

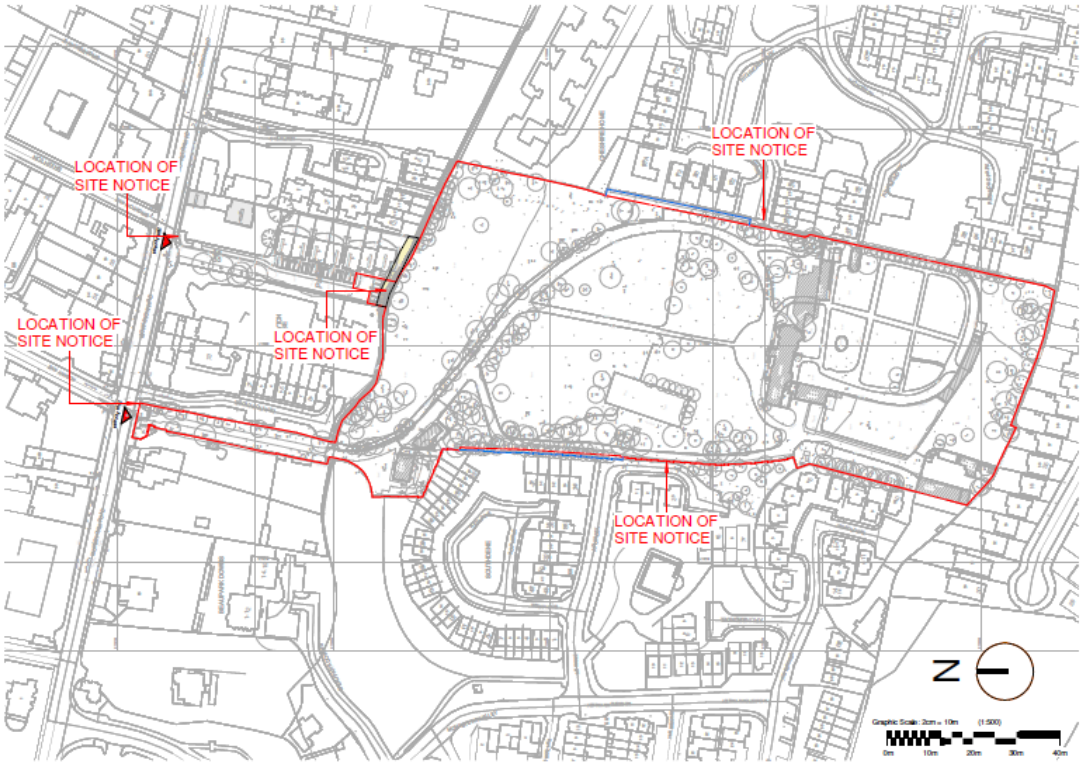

Figure 1.1: Extract from Reddy A+U's Site Plan, Dwg. No. MKS-RAU-XX-DR-AR-0001 showing the red line boundary for the proposed LRD project.

In terms of an overview of the proposed development, the development ('Proposed Project') will consist of the demolition and part-demolition of existing structures (total demolition area 967 sq m), including:

- White Lodge a 2 storey house (192 sq m);
- Swimming pool extension to the southeast of Dalguise House (250 sq m);
- Residential garage and shed to the southwest of Dalguise House (285 sq m);
- Lean-to structures to the south of the walled garden (142 sq m);
- Part-demolition of Lower Ground Floor at Dalguise House (9 sq m);
- Demolition of single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard;
- Demolition of potting shed (13 sq m);
- Removal of 2 no. glasshouses; and
- Alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east.

The development with a total gross floor area of approximately 46,940 sq m (including a basement of 5,230 sq m and undercroft parking 1,344 sq m; and 45,712 sq m of new build, excluding the retained existing buildings of 1,228 sq m), will consist 491 No. residential units, consisting of 484 No. new build and 7 No. residential units within existing structures (the latter repurposed from Dalguise House, Gate Lodge and Coach House).

The residential provision will comprise 3 No. two storey 3-bed terraced houses (GFA 569 sq m), and 488 No. Build-to-Rent units (consisting of 2 No. studio units; 288 No. 1-beds; 32 No. 2-beds/3 persons; 153 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The development will specifically consist of the construction of:

- Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units (15 No. 1-beds, 4 No. 2-beds) and a childcare facility (540 sq m over Ground and First Floor Levels);
- Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 6 No. 2-beds/3 persons, 9 No. 2-beds/4-persons);
- Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 6 No. 2-beds/3 persons, 9 No. 2-beds/4-persons);
- Block D (total GFA 4,150 sq m) 7 storey over basement level car park, comprising 50 No. apartment units (24 No. 1-beds, 26 No. 2-beds);
- Block E (total GFA 5,904 sq m) 9 storey over basement level car park, comprising 66 No. apartment units (40 No. 1-beds, 26 No. 2-beds), with residents' support facilities (75 sq m) and residents' amenities (gym, yoga studio, residents' lounge/co-working space; lobby 494 sq m) at Ground Floor Level, and residents' amenities (residents' lounge; games room; screen room; private lounge; kitchen 333 sq m) with roof terrace (106 sq m) at Eighth Floor Level;
- Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3 persons, 23 No. 2-beds/4-persons, 2 No. 3-beds);
- Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3 persons, 23 No. 2-beds/4-persons, 2 No. 3-beds);
- Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units (30 No. 1-beds, 5 No. 2-beds/3 persons, 17 No. 2-beds/4-persons, 2 No. 3-beds);
- Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 2 No. 2-beds/3 persons, 7 No. 2-beds/4-persons);

- Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 2 No. 2-beds/3 persons, 7 No. 2-beds/4-persons); and
- Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units (13 No. 1-beds and 7 No. 3-beds)); the refurbishment, adaptation and reuse of: two storey Dalguise Lodge (Entrance Lodge) (GFA 55 sq m) comprising residential support facilities;
- The refurbishment, adaptation and reuse of: a single storey Gate Lodge (GFA 55 sq m) comprising 1 No. 1-bed unit;
- The refurbishment, adaptation and reuse of a two storey Coach House and single storey Stableman's House (GFA 319 sq m) to provide 3 No. apartment units (1 No. 1-bed, 2 No. 2-bed/4 persons);
- The refurbishment, adaptation and change of use of Dalguise House (GFA 799 sq m) from a single residential dwelling to provide: 3 No. apartment units (2 No. studios and 1 No. 2-bed/3 person) at First Floor Level; a restaurant/cafe at Lower Ground Floor Level (GFA 273 sq m); and residents' amenities at Ground Floor Level (library, residents' lounge, events space, bar/bookable room, 157 sq m); works to the existing structures include: removal of existing internal partitions and doors, alterations to internal layout including provision of new partitions and doors to Dalguise Lodge (Entrance Lodge); the removal of the western chimney and chimney breast, removal of existing internal partitions and doors, and alterations to internal layout including provision of new partitions and doors to Gate Lodge (Brick Lodge); replacement of existing roof, windows and doors, non-original mezzanine floor and stairs of Coach House, creation of new internal and external opes, reconstruction of chimney, construction of new stairs, provision of new internal partitions and doors, replacement of the demolished single storey structure to south of Coach House with a 42 sq m single storey extension, including construction of a link between Coach House and Stableman's House; replacement of existing roofs, windows, doors, creation of new external opes and provision of new internal partitions and doors to Stableman's House; restoration of Coach House yard walls; removal of security bars from windows, internal partitions, doors, two secondary staircases, non-original fireplaces; and the reconfiguration of internal layout including introduction of new partitions, doors and fireplaces, in-fill of former secondary staircases; removal of an existing window at rear facade of Lower Ground Level, alterations to ope and replacement with a new external door; reinstatement of external wall fabric in place of demolished lean-to at the rear facade; and removal of external door to swimming pool on eastern facade and closure of ope at Dalguise House);
- The development will also consist of: the construction of a garden pavilion; the provision of balconies and terraces, communal open space including roof gardens, public open spaces, hard and soft landscaping, landscaping works including the removal of trees, alterations to boundaries; the provision of: 224 No. car parking spaces (148 No. at basement level; 20 No. at undercroft; and 56 No. at surface level); motorbike spaces; level changes; ESB Substations (at Block D and Block H); plant areas; waste storage areas; provision of cycle

parking (including cargo bike spaces) at basement and surface level; and all ancillary site development works above and below ground.

Vehicular and pedestrian access and egress is provided at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck. Alterations will be made at Purbeck including the relocation of 4 No. existing car parking spaces to facilitate the construction of a new vehicular and pedestrian bridge over the Stradbrook Stream. Provision is also made in the landscaping proposals for potential future pedestrian and cycle connections that would facilitate permeability through the site boundaries with the residential estates of Arundel and Richmond Park, respectively, and the former Cheshire Home site, subject to agreement with those parties and/or Dún Laoghaire-Rathdown County Council, as appropriate.

The details of the proposed project are set out in full in Chapter 5.

1.4 Environmental Impact Assessment (EIA)

EIA requirements are governed by Directive 2011/92/EU, as amended by Directive 2014/52/EU (together, the EIA Directive). The primary objective of the EIA Directive is to ensure that projects that are likely to have significant effects on the environment are subjected to an assessment of their likely impacts.

EIA forms part of the planning consent process and is carried out by the Competent Authority. An EIAR is prepared by/ on behalf of an Applicant in respect of a project seeking planning consent. The EIAR thus becomes an integral informing element in the Competent Authority's EIA. The 2014 Directive has introduced new requirements in respect of the competency of experts responsible for the preparation of the EIAR (see Section 1.5.1 below for details on the experts involved in the preparation of this document).

The environmental assessment presented in this EIAR has evaluated the *Construction* (initial site development works) and *Operational* (the day-to-day functioning/operation of the site) Phases of the proposed Project.

The EIAR describes the existing environment (baseline); identifies potential impacts of the proposed project; details any mitigation measures required to reduce or eliminate potential impacts; and predicts any residual impacts.

An overview of the EIA process and the steps involved are set out in Table 1.1 below. Further information on the approach to EIA are presented in Chapter 2 (The EIA Process).

Table 1.1: Overview of the EIA Process

Stage	Description	Status
1. Screening	Is an EIA required?	Yes
2. Scoping	The outline of the likely significant effects of the proposed project and the aspects to be considered in the impact assessment.	An informal scoping process was completed in respect of the project
3. Environmental Impact Assessment	This stage includes:	Current Stage

	• Collection of baseline information; • Analysis of the proposed project; • Assessment of impacts; • Developing mitigation measures; and • Setting out requirements for monitoring.	
4. Review and Decision	The EIAR accompanies the planning application to the planning authority (i.e. An Bord Pleanála) for determination of the application.	
5. Monitoring	Implementation and monitoring of the proposed Mitigation Measures.	Next Stage

1.5 Format and Structure of the EIAR

Table 1.2 below sets out the format and structure of this Environmental Impact Assessment Report.

Table 1.2: Structure of the EIAR

Chapter No.	Description
Volume 1: Non-Technical Summary (NTS)	
NTS	Summary of the EIAR in non-technical language
Volume 2: Main Report + Appendices	
Chapters 1 - 3	Provide an introduction and background to the proposed project
Chapter 4	An assessment of the alternatives considered for the proposed project
Chapter 5	Description of proposed project assessed in the EIA.
Chapter 6	Consultation
Chapter 7	Population and Human Health
Chapter 8	Biodiversity
Chapter 9	Land, Soils, Geology and Hydrogeology
Chapter 10	Hydrology
Chapter 11	Air Quality and Climate
Chapter 12	Noise and Vibration
Chapter 13	Landscape and Visual
Chapter 14	Cultural Heritage and Archaeology
Chapter 15	Architectural Heritage
Chapter 16	Microclimate - Wind

Chapter 17	Material Assets – Roads and Traffic
Chapter 18	Material Assets - Waste
Chapter 19	Material Assets – Built Services
Chapter 20	Interactions
Chapter 21	Cumulative Impacts
Chapter 22	Environmental Commitments/ Mitigation measures included in the EIAR document
Volume 3: Photomontages	
Photomontages	Photomontages (in conjunction with TVIA – chapter 13)

1.5.1 EIAR Project Team

The EIAR was project managed, co-ordinated and produced by Tom Phillips + Associates (TPA). TPA coordinated the EIA process and liaised between the design team and various environmental specialist consultants.

Environmental specialists were commissioned for the specialist environmental chapters of the EIAR document as required by the EIA Directive and Regulations. The amended EIA Directive (Directive 2014/52/EU) states the following in relation to the persons responsible for preparing the environmental impact assessment reports:

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

In compliance with this requirement, and in line with emerging best practice, including with the 2018 EIA Guidelines for Planning Authorities, Table 1.3 provides the names of the professionals who have prepared each element of the EIAR. It also lists their qualifications and relevant experience, demonstrating that the EIAR has been prepared by competent experts.

Table 1.3: EIAR Project Team and Environmental Specialists

Name	Role	Company	Qualification/ Experience
Cheryl O'Connor	EIAR Project Manager, Co-ordinator and Planner.	Tom Phillips + Associates (TPA)	**Cheryl O'Connor- BSocSc, MPlan (Planning and Sustainable Development)** • Senior Planner • Corporate Member of the Irish Planning Institute (IPI) and Licensee Member of the Royal Town Planning Institute (RTPI) • Over 7 years' experience in Planning and EIA.
Eoghan O'Brien	Consideration of Alternatives Assessment.	Reddy Architecture + Urbanism (RAU)	**Eoghan O'Brien- MRIAI** • Associate Director • Registered Architect with the Royal Institute of the Architects of Ireland (MRIAI No. 18067)

			• Over 10 years' experience in housing and residential architecture.
Chonaill Bradley and David Doran	Population and Human Health Assessment.	AWN	**Chonaill Bradley- BScEnv AssocMCIWM** • Principal Environmental Consultant • Associate Member of the Chartered Institute of Waste Management • Over 7 years' experience in EIA, Environmental reporting and Waste Management **David Doran- MSc in Environmental and Energy Management** • Environmental Consultant with 1.5 years' experience in the Environment Team at AWN. Holds a MSc in Environmental and Energy Management and is an Affiliate Member of CIWM.
Patrick O'Shea/Kalvin Townsend-Smyth/Rachel Heaphy	Biodiversity Assessment	ROD	**Patrick O'Shea- M.Sc. Ecological Management and Conservation Biology;** **BA in Natural Sciences (Botany).** • Senior Ecologist in ROD • (MCIEEM) Full Member of Chartered Institute of Ecology and Environmental Management • Patrick holds licences issued by the National Parks and Wildlife Service for bat roost disturbance during surveys (DER-BAT-2022-39) and to handle bats during the course of his work • (C59/2022). • Over 9 years' in ecological survey and assessment for infrastructure projects. **Kalvin Townsend-Smyth- BSc (Hons) in Wildlife Biology** • Ecologist at ROD • 3 years' experience in ecological consultancy **Rachel Heaphy- BSc (Hons) in Zoology** • Ecologist at ROD • 1 year experience in ecological assessment.
Jackelyn Wren	Land, Soils, Geology and Hydrogeology Assessment	ByrneLooby Consulting Engineers	**Jackelyn Wren - Honours Bachelor of Arts Degree in Geography** • Senior Environmental Specialist • 8 years' professional experience in the preparation of Environmental Impact

			Assessment (EIA) Reports in Ireland and the Middle East.
Jackelyn Wren	Hydrology – Surface Water	ByrneLooby Consulting Engineers	**Jackelyn Wren - Honours Bachelor of Arts Degree in Geography** • Senior Environmental Specialist • 8 years' professional experience in the preparation of Environmental Impact Assessment (EIA) Reports in Ireland and the Middle East.
Niamh Nolan	Air Quality and Climate Assessment	AWN Consulting	**Niamh Nolan- BSocSci (Hons) Social Policy and Geography** • Air Quality Consultant. • Associate member of Institute of Air Quality Management (IAQM) and the Institution of Environmental Science (IES). • Experience in mapping software primarily in QGIS and she specialises in the area of air quality, climate and sustainability. •
Leo Williams	Noise and Vibration Assessment	AWN Consulting	**Leo Williams- BAI MAI PgDip MIOA** • Senior Acoustic Consultant • Member of Institute of Acoustics (MIOA) • 6 years' experience as an environmental consultant specialising in Acoustics and Environmental Impact Assessment.
Richard Barker	Landscape and Visual Assessment	Macroworks	**MLA, PG Dip (Forestry), BA (Environmental)** • Principal Landscape Architect • Corporate member ILI • Over 23 years experience in LVIA
Faith Bailey	Cultural Heritage, Archaeology Assessment	IAC	**Faith Bailey- MA, BA (Hons), MIAI, MCIfA** • Associate Directorwith IAC Ltd. • 18 years' experience in archaeological and cultural heritage consultancy, responsible for the production of EIAR and assessments for all aspects of development nationwide.
Ciarán Mullarkey & Karl Pedersen	Architectural Heritage	Mullarkey Pedersen Architects	**Ciarán Mullarkey** • Qualified in 2000- RIAI Part III at University College Dublin • Qualified in 1992 - Dip Architecture, with Distinction - Edinburgh University • Qualified in 1991 - MA (Hons) Architecture - Edinburgh University

			• 2006 – Member of the Royal Institute of the Architects of Ireland (Membership No. 06132) • 2012 – RIAI Conservation • Architect Grade III- 30 years experience **Karl Pedersen** • Qualified in 1989 Bachelor of Science in Architecture – University of Dundee • Qualified in 1992 First Class Bachelor of Architecture (Hons) – University of Dundee • Qualified in 1993 RIBA Part III – Professional Practice – University of Dundee • 1993 Architects' Registration Board No. 059423G • 2006 Royal Institute of the Architects of Ireland No. 06198 • 2010 RIAI Grade 1 Conservation Architect- 30 years experience
Dr Liam Harrington	Microclimate - wind	Metec	**Dr Liam Harrington- BSc Hons (Physics) MSc Energy Systems PhD Computer Modelling,** • A Computational Fluid Dynamics and Building Physics Consultant with over 25 years experience in computer modelling in the fields of Computational Fluid Dynamics, Dynamic Thermal Simulation and Lighting.
Maurice Ramsey	Material Assets- Built Services	Metec	**Maurice Ramsey - BA, BAI, MSc, CEng MIEI, FConsEI,** • Director of Metec Consulting Engineers has contributed the outline of the available MEP utilities on the site and has detailed all identified risks associated with these services. • Holds a Bachelor's Degree in Mathematics, a Bachelor's Degree in Engineering and a Masters Degree in Engineering. • Chartered Engineer (Engineers Ireland) 2003 • F Cons EI (Association of Consulting Engineers of Ireland) 2021 • Holds over 25 years of experience within in the consultancy side of the construction industry in Ireland. He has been involved in the preparation of EIAR documents for over fifteen years and is particularly familiar with the area in and around Dublin where many of his projects are located.

Eoin Ó Catháin	Traffic and Transport Assessment	ROD	**Eoin Ó Catháin- Chartered Engineer (CEng MIEI)** • Partner and Technical Director in ROD • Qualified as a Civil Engineer (BEng.) from University College Dublin (UCD) in 2004. • Holds a post graduate qualification in Transport and Environmental Engineering (MSc 2006, Trinity College Dublin; • Construction Law and Contract Administration, (PostGrad Dip, TCD, 2013); • Health and Safety (PostGrad Dip, TCD, 2020). • Holds 18+ years of experience in traffic and transport engineering and planning. • Registered Consulting Engineer (RConsEI), • Member of the Chartered Institute of Arbitrators (MCIArb) and a graduate member of the Institute of Occupational Safety and Health (GradIOSH).
Chonaill Bradley and David Doran	Waste Management	AWN Consulting	**Chonaill Bradley- BScEnv AssocMCIWM** • Principal Environmental Consultant • Associate Member of the Chartered Institute of Waste Management • Over 7 years' experience in EIA, Environmental reporting and Waste Management **David Doran- MSc in Environmental and Energy Management** • Environmental Consultant with 1.5 years' experience in the Environment Team at AWN. • Holds a MSc in Environmental and Energy Management and is an Affiliate Member of CIWM
Maurice Ramsey	Site Services Assessment	Metec	**Maurice Ramsey - BA, BAI, MSc, CEng MIEI, FConsEI,** • Director of Metec Consulting Engineers has contributed the outline of the available MEP utilities on the site and has detailed all identified risks associated with these services. • Holds a Bachelor's Degree in Mathematics, a Bachelor's Degree in Engineering and a Masters Degree in Engineering. • Chartered Engineer (Engineers Ireland) 2003 • F Cons EI (Association of Consulting Engineers of Ireland) 2021

			• Holds over 25 years of experience within in the consultancy side of the construction industry in Ireland. He has been involved in the preparation of EIAR documents for over fifteen years and is particularly familiar with the area in and around Dublin where many of his projects are located.

2.0 THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCESS

2.1 EIA Legislation

The European EIA Directive 85/337/EEC was introduced in 1985. The Directive along with its three subsequent amendments was eventually codified by Directive 2011/92/EU. The 2011 Directive was further amended by Directive 2014/52/EU. The amending Directive took effect in Ireland on 16th May 2017, and the transposing legalisation (*European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018* (S.I. No. 296 of 2018)) came into effect on 1st September 2018.

The EIA Directive aims to provide a high level of protection to the environment and ensures that environmental considerations are taken into account in the preparation of a proposed development or project, with the view to reducing environmental impacts. EIA also includes public participation in decision-making and thereby strengthens the quality of decisions.

The 2014 Directive requires that certain developments be assessed for *likely environmental effects* before planning approval be granted. When submitting a planning application for such development, the applicant must also submit an accompanying Environmental Impact Assessment Report (EIAR).

The EIA Directive is transposed into various Irish statutes, but the relevant legislation for this project is the Planning and Development Act 2000 (as amended), the Planning and Development Regulations 2001 (as amended) and *European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018*.

The Department has also issued the updated the 'G*uidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment'* in August 2018, to provide practical guidance on legal and procedural issues arising from the requirement to undertake EIA in accordance with Directive 2014/52/EU. These Guidelines have informed the preparation of this EIAR. The preparation of the EIAR has also had regard to the EPA *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022).

2.2 EIA Process

EIA is the process for anticipating the effects on the environment caused by a proposed development or project. Where effects are significant, the EIA process examines whether design or other measures can be taken to avoid or reduce the significance of these effects. The EIAR is the document produced as a result of the Environmental Impact Assessment (EIA) process, that:

- Provides a description of the baseline environment;
- Identifies the potential effects as a result of the proposed development or project;
- Assesses these potential effects;
- Provides a description of any mitigation measures required to reduce or eliminate such potential effects; and
- Assesses the residual potential effects, post the implementation of mitigation.

The EIA process is summarised as follows:

- **Screening**

  Is an EIA required?

- **Scoping**

  What issues should be considered within the EIAR?

- **Baseline data collection**

  Establishing a robust baseline of the existing environment on/around the proposed site.

- **Impact assessment**

  Assessment of the environmental impacts and establishing their significance.

- **Mitigation**

  A description of the mitigation measures and/or factors that reduce or eliminate any significant environmental impacts identified, which cannot be avoided practically through design.

- **Consultation**

  With statutory stakeholders, the public and other bodies.

- **Decision**

  The competent authority, in this case An Bord Pleanála, taking into account the results of consultations, decides if the proposed project can be authorised.

- **Monitoring**

  Implementation and monitoring of mitigation measures.

In accordance with the requirements of Article 3 of the EIA Directive, the EIA shall identify, describe and assess the direct and indirect significant effects of the proposed projects, in an appropriate manner, on the following factors:

a) population and human health;
b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
c) land, soil, water, air and climate;
d) material assets, cultural heritage and the landscape;
e) the interaction between the factors referred to in points (a) to (d).

2.3 EIA Methodology

2.3.1 EIA Guidance

This assessment of environmental impacts has been completed in accordance with, but not limited to, the following legislation and current guidance:

- DHPLG (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;*
- DHPLG (2017) *Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition*;
- EC (1999) *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*;
- EC (2013) *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment*;
- EC (2017) *Environmental Impact Assessment of Projects. Guidance on Scoping*;
- EC (2017) *Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report;*
- EPA (2015) *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (2015);
- *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022);
- EU (2014) Directive 2014/52/EC, amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment;
- *Planning and Development Act 2000*, as amended; and
- *Planning and Development Regulations 2001*, as amended.

In addition to these guidance documents, all EU Directives and national legislation relating to the specialist areas (e.g. Biodiversity, Air and Climate, Noise) have been considered under each relevant environmental aspect. Specific guidance is addressed in the relevant chapters of this EIAR.

2.3.2 The Need for EIAR (EIA Screening)

Screening is Stage 1 in the process, whereby a decision is made on whether or not an EIA is required. In order to determine whether an EIA is required for the proposed project, it is necessary to determine whether it is a project listed in one of the Annexes to the EIA Directive.

The EIA Directive specifies the classes of project for which an EIA is required and the information which must be contained within the EIAR. In accordance with *Article 4(1)* of the EIA Directive, all projects listed in Annex I are considered as having significant effects on the environment and shall be subject to EIA. For projects listed in Annex II of the Directive, the national authorities may determine whether an EIA is needed, either on the basis of thresholds/criteria or on a case by case examination.

These Annexes have been transposed into Irish law by the provisions of the *Planning and Development Act 2000 (as amended)* and the *Planning and Development Regulations 2001 (as*

amended). Specifically projects requiring mandatory EIA are listed in Part 1 and Part 2 of Schedule 5 of the *Planning and Development Regulations 2001-2022*.

Schedule 5 (Part 1) of the *Planning & Development Regulations 2001* (as amended) lists major project classes for the purposes of mandatory EIA, which typically include industrial, chemical, energy, waste, infrastructure and intensive agricultural developments. The proposed project does not correspond to a development set out in this Part and therefore, EIA is not a requirement under this provision.

Schedule 5 (Part 2) of the *Planning & Development Regulations 2001* (as amended) sets mandatory thresholds for each project class above which EIA is required. Sub-sections 10(b)(i) and 10(b)(iv) addresses '*infrastructure projects'* referring to housing and urban developments, and require that the following class of project, relevant to this project, be subject to EIA:

Class 10 – Infrastructure Projects

Subsection 10(b)(i):

> "*Construction of more than 500 dwelling units*"

This Project comprises a large-scale residential development including 491 No. residential units comprising: 3 No. two storey 3-bed terraced houses (GFA 569 sq m), and 488 No. Build-to-Rent units (consisting of 2 No. studio units; 288 No. 1-beds; 32 No. 2-beds/3 persons; 153 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The Project lies just below the 500-dwelling unit threshold and therefore a mandatory EIA is not required in the context of this Class of the Regulations.

Part 2 Class 10 – Infrastructure Projects

Subsection 10(b)(iv):

> "*Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere*"
>
> *(In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)*"

The LRD Project relates to a site of c.3.58 hectares and is located within an area which comes within the definition of "*other parts of a built-up area*". The Project therefore does not exceed the threshold of 10 hectares, with respect to site area of the proposed development.

The proposed residential development does not exceed the criteria as set out to determine the need for a mandatory EIA. However, section 172 of the Planning & Development Act 2000, as amended, also sets out the basis for EIA for developments which do not equal or exceed,

the relevant quantity, area or other limit specified in Part 2 of Schedule 5, i.e., *"sub-threshold development"*. Thus, an EIA is required where sub-threshold development is likely to have significant effects on the environment and therefore should be subject to EIA.

Given that the proposed development for 491 units is almost equal to the "*Construction of more than 500 dwelling units",* it was deemed prudent to undertake an EIAR in relation to the subject development to ensure that the proposal does not negatively impact on the environment.

Part 2 Class 14 – Works of Demolition

> *"Works of demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7. "*

The development will consist of the demolition and part-demolition of existing structures (total demolition area 967 sq m), including: White Lodge a 2 storey house (192 sq m); Swimming pool extension to the southeast of Dalguise House (250 sq m); Residential garage and shed to the southwest of Dalguise House (285 sq m); Lean-to structures to the south of the walled garden (142 sq m); Part-demolition of Lower Ground Floor at Dalguise House (9 sq m); Demolition of single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard; Demolition of potting shed (13 sq m); Removal of 2 no. glasshouses; and alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east.

Given the scale and nature of buildings to be demolished, it is not envisaged that likely significant effects on the environment arising from the demolition will occur. Nevertheless, the likely impacts arising with respect to the demolition of these building will be assessed in full as part of the EIA, in the context of Material Assets – Waste, Material Assets - Traffic and Transportation, Noise and Vibration, Air Quality and Climate, Human Health, and as part of the Construction Environmental Management Plan. On this basis, it is considered that the Project does not require the preparation of an EIAR with respect to this Class.

2.3.3 EIA Scoping

The EPA Guidelines state that 'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in the EC (2001) guidance as: '*determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR'.*

The EIAR has been prepared to address those aspects identified in Article 5 and Annex IV of the EIA Directive and Schedule 6 of the Regulations. The EIAR has also been prepared in the context of Section 3 of the *Guidelines on the Information to be Contained in the Environmental Impact Assessment Reports,* prepared by EPA (2022). Table 2.1 below documents the scoping exercise undertaken in respect of this EIAR.

Table 2.1: Scoping exercise – potential for significant effects arising from the proposed project.

Environmental Aspect	Detailed Assessment	Justification
Population and Human Health	Yes	The proposed development has the potential to impact on population and human health, employment, local community and amenity uses, during the construction and operational phases.
Biodiversity	Yes	The subject lands are not located within any Natura 2000 or nationally designated conservation sites but are located within 15km of a number of designated sites. There is potential for habitats to be recorded on site and therefore, the proposed development therefore has potential to impact on biodiversity.
Land, Soils, Geology and Hydrogeology	Yes	The proposed development includes the excavation, movement and deposition of soil as part of the construction process. The impacts on geology and hydrogeology should therefore be assessed in terms of the groundworks, construction and operational phase of the proposed development.
Hydrology – Surface Water	Yes	The proposed development does have the potential to impact on water (including flood risk, hydrology and drainage) as there will be ground disturbance associated with the proposed development.
Air Quality and Climatic Factors	Yes	Construction and operational phases will have the potential to give rise to air quality impacts, principally relating to traffic associated with the proposed development.
Noise and Vibration	Yes	Construction and operational phases will have the potential to give rise to impacts relating to noise and vibration. A baseline noise survey has been undertaken to determine the prevailing noise level representative of the site and nearest noise sensitive locations.

Landscape and Visual	Yes	Given the height and scale of the buildings proposed when compared to the existing sensitive/ undeveloped nature of the subject lands, the LVIA will consider effects on the landscape character of the existing setting (i.e. as a result of the construction and existence of the proposed development) and visual impacts (i.e. the extent to which the proposed development when built will effect the landscape).
Cultural Heritage, Archaeology and Architectural	Yes	The site contains a number of heritage assets which gives rise to the potential for impact upon any relevant Archaeological, Architectural or Cultural Heritage. Detailed assessment is therefore required.
Wind	Yes	The proposed development will introduce a number of buildings to the site which will be taller than the surrounding existing context, it therefore has the potential to impact upon the microclimate with respect to wind and pedestrian comfort.
Material Assets – Roads and Traffic	Yes	The transportation chapter of the EIAR is required to present an assessment of the potential traffic and transport impacts of the proposed development. The assessment will be influenced by the requirements set out within *Traffic and Transport Assessment Guidelines* TII, 2017.
Material Assets – Waste Management	Yes	The proposed development may generate waste arisings that will require management during construction and operation.
Material Assets – Built Services	Yes	The Material Assets section of the EIAR will examine the likely significant effects of the construction and operation of the proposed development on intrinsic and valuable assets of material value.
Major Accidents and Disasters	Yes	Section 10.4 of the *Dún Laoghaire Rathdown Development Plan 2022-2028* notes that there are no 'Seveso' sites (defined within the 'COMAH

		Regulations as 'locations where significant quantities of dangerous substances are stored') within Dún Laoghaire-Rathdown. As a result, there is no expected impact arising from major accident hazards involving dangerous substances in association with the proposed development. Due to the scale and nature of the proposed development and the location of the subject lands, potential significant impacts are not expected. Nonetheless, any potential impacts in respect of the risk of major accidents and disasters will be addressed within the Population and Human Health Chapter and Air Quality and Climate Chapter (e.g. in relation to flooding). The planning application is also supported by a standalone *Site Specific Flood Risk Assessment* which addresses flood risk in the context of climate change.
Interactions	Yes	There is the potential for multiple direct or indirect effects (from various environmental aspects) to result in an accumulation or magnified effects from the proposed development.
Cumulative Impacts	Yes	The proposed development will be in proximity to other development, both permitted and proposed development and thus has the potential to exacerbate or create larger, more significant effects.

Scoping was carried out on an informal basis through the submission of a report documenting an informal scoping exercise (*Environmental Impact Assessment Scoping Report (and Summary of Possible Effects)* submitted to both Dún Laoghaire Rathdown County Council at the pre-application consultation stage. In this document, the environmental aspects that were proposed to be considered in detail in this EIAR were identified on the basis that there is potential for significant effects. That said, scoping is considered to be an iterative process and is ongoing throughout the development and preparation of the EIAR.

2.4 EIA Consultation

Consultation with key stakeholders, including Dún Laoghaire Rathdown County Council has taken place at the pre-application stage via the Large Scale Residential Development Pre-Application Consultation process.

Furthermore, this document enables the competent authority to determine the acceptability of the proposed development in the full knowledge of the project's likely significant impacts on the environment (if any). The decision-making process follows a statutory process that allows for public consultation and the receipt of advice from other key stakeholders and statutory authorities with specific environmental responsibilities. Further information on the Consultation Process is set out in Chapter 6 of this EIAR.

3.0 PLANNING AND DEVELOPMENT CONTEXT

3.1 Introduction

This Chapter provides the legislative context in relation to the planning and development of the proposed project, including an overview of the national, regional and local planning policy pertaining to the site. Regard is also given to other relevant statutory and non-statutory planning documents where appropriate.

In this case, the project is defined as a Large-Scale Residential Development (LRD) on the basis that it comprises *"… a development of 100 housing units or more, or student accommodation developments comprising 200 bed spaces or more, or a combination of same."*, as set out in Section 2 of the *Planning and Development (Amendment) (Large-scale Residential Development) Act 2021.*

3.2 National Planning Context

3.2.1 National Planning Framework – Project Ireland 2040

The *National Planning Framework* (NPF), published in February 2018, sets out a strategic development framework for the Country to 2040. The *National Planning Framework* is the Government's plan to cater for the extra one million people that will be living in Ireland, the additional two thirds of a million people working in Ireland and the half a million extra homes needed in Ireland by 2040.

The Framework focuses on:

- Growing regions, their cities, towns and villages and rural fabric.
- Building more accessible urban centres of scale.
- Better outcomes for communities and the environment, through more effective and coordinated planning, investment and delivery.

As a strategic development framework, the Plan sets the long-term context for Ireland's physical development and associated progress in economic, social and environmental terms and in an island, European and global context. Ireland 2040 will be followed and underpinned by supporting policies and actions at sectoral, regional and local levels.

Under the heading of 'Compact Growth', the NPF is:

> *"Targeting a greater proportion (40%) of future housing development to happen **within and close to existing built-up areas**. Making **better use of under-utilised land,** including 'infill' and 'brownfield' and publicly owned sites together with higher housing and jobs densities, better serviced by existing facilities and public transport".*

[**Our emphasis**.]

A recurring theme in the Plan is the requirement to ensure that the future growth of Dublin occurs within its Metropolitan limits. The NPF estimates that Dublin City and suburbs will grow by c. 264,000 people in the period to 2040. Ireland 2040 targets a significant proportion of future urban development on infill/brownfield development sites within the built envelope of existing urban areas. This is applicable to all scales of settlement, from the largest city, to the smallest village.

National Policy Objectives

The NPF outlines National Policy Objectives, which set out broader aspirations for national and regional planning. Several of these are relevant when considering the proposed development at this subject site. These include:

- ***National Policy Objective 2a*** *– A target of half (50%) of future population and employment growth will be focused in the existing five Cities and their suburbs.*
- ***National Policy Objective 3b*** *– Deliver at least half (50%) of all new homes that are targeted in the five Cities and suburbs of Dublin, Cork, Limerick, Galway and Waterford, within their existing built-up footprints.*
- ***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 scale 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 7*** *- Apply a tailored approach to urban development, that will be linked to the Rural and Urban Regeneration and Development Fund, with a particular focus on:-* ***Dublin****; the four Cities of Cork, Limerick, Galway and Waterford; Strengthening Ireland's overall urban structure, … Encouraging population growth in strong employment and service centres of all sizes, supported by employment growth;*

Reversing the stagnation or decline of many smaller urban centres, by identifying and establishing new roles and functions and enhancement of local infrastructure and amenities; Addressing the legacy of rapid unplanned growth, by facilitating amenities and services catch-up, jobs … In more self-contained settlements of all sizes, supporting a continuation of balanced population and employment growth.

- ***National Policy Objective 8*** *– To ensure that the targeted pattern of population growth of Ireland's cities to 2040 is in accordance with the targets set out in Table 4.1.*

City	Population 2016	Population Growth to 2040[27]		Minimum Target Population 2040
		% Range	People	
Dublin - City and Suburbs	1,173,000	20-25%	235,000 - 293,000	1,408,000
Cork - City and Suburbs	209,000	50-60%	105,000 - 125,000	314,000
Limerick - City and Suburbs	94,000	50-60%	47,000 - 56,000	141,000
Galway - City and Suburbs	80,000	50-60%	40,000 - 48,000	120,000
Waterford - City and Suburbs	54,000	50-60%	27,000 - 32,000	81,000

Figure 3.1: Extract from Table 4.1 'Ireland 2040: Targeted Pattern of City Population Growth' contained within the National Planning Framework.

- ***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 28*** *- Plan for a more diverse and socially inclusive society that targets equality of opportunity and a better quality of life for all citizens, through improved integration and greater accessibility in the delivery of sustainable communities and the provision of associated services.*

- ***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.*

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

The *Sustainable Residential Development in Urban Areas - Guidelines for Planning Authorities, (2009)* and its associated document *Urban Design Manual – A Best Practice Guide (2009)* illustrate essential criteria for sustainable urban residential development and describes how a scheme can integrate seamlessly into a site, taking consideration of its surroundings and thus presenting the best possible residential design scheme in built-up areas.

3.2.3 Rebuilding Ireland – Action Plan for Housing and Homelessness (2016)

Rebuilding Ireland was launched in 2016 with the aim of addressing ongoing supply issues for residential accommodation in Ireland. The overarching aim of the *Action Plan* is to increase the delivery of housing from its current undersupply across all tenures and to help individuals and families meet their housing needs.

The Action Plan provides a target to double the number of residential dwellings delivered annually by the construction sector and to provide 47,000 social housing units in the period up to 2021.

3.2.4 Sustainable Urban Housing: Design Standard for New Apartments: Guidelines for Planning Authorities (2020)

The *Sustainable Urban Housing Design Standards for New Apartment* (2020) provides for an update on guidance on apartment developments in response to the National Planning Framework and Rebuilding Ireland.

These Guidelines seek to promote high density apartment development on residentially zoned land in appropriate locations in line with the above referenced NPF overarching policies in relation to encouraging residential development within existing urban settlements.

3.2.5 Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)

The *Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas* (2009) aim to ensure the sustainable delivery of new development throughout the Country.

The Guidelines also provide guidance on the core principles of urban design when creating places of high quality and distinct identity. The Guidelines recommend that planning authorities should promote high quality design in their policy documents and in their development management process. In this regard, the Guidelines are accompanied by a Design Manual, discussed below.

Furthermore, the Guidelines provide national guidance in relation to the appropriate locations for the siting of higher density residential development, having regard to the locational characteristics of the lands in question.

3.2.6 Urban Design Manual – A Best Practice Guide (2009)

The *Urban Design Manual – A Best Practice Guide* (2009) notes 12 no. criteria that should be used to facilitate assessment of planning applications and should, therefore, be used as a guide to steer best design practice for residential proposals.

3.2.7 Delivering Homes, Sustaining Communities (2007)

This document provides the overarching policy framework for an integrated approach to housing and planning. It notes that demographic factors will continue to underpin strong

demand for housing, which in turn will present considerable challenges for the physical planning of new housing and the provision of associated services. Sustainable neighbourhoods are areas where an efficient use of land, high quality design, and effective integration in the provision of p people want to live in.

3.2.8 Childcare Facilities – Guidelines for Planning Authorities (2001)

The *Childcare Guidelines* (2001) generally recommend the provision of childcare facilities for residential development with 75 no. units or more, albeit having regard to the existing geographical distribution of such facilities in the area and the emerging demographic profile of the area.

3.2.9 Design Manual for Urban Roads and Streets (DMURS) (2013)

A key objective of DMURS is to achieve safe, attractive and vibrant streets by balancing the needs of all users, and prioritising alternatives to car journeys. The manual advocates a design-led approach, which takes account of both the physical and social dimensions of place and movement.

3.2.10 The Planning System and Flood Risk Management (2009)

The Office of Public Works (OPW) and the Department of Environment, Heritage and Local Government (DEHLG) published *The Planning System and Flood Risk Management Guidelines for Planning Authorities*, November 2009. The *Planning Guidelines* introduce the principle of a risk-based sequential approach to managing flood risk.

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

The Appropriate Assessment Guidance was published to guide compliance with the Birds Directive, 1979 and the Habitats Directive, 1992.

3.2.12 Climate Action Plan (2019)

The Government's *Climate Action Plan* (2019) documents a broad spectrum of potential actions which can mitigate the effects of climate change as caused by pollution and the over-exploitation of natural resources. With regard to the built environment, these measures include the rational siting of urban development, the building of compact, dense and well-designed neighbourhoods, and the imposition of higher energy efficiency performance standards.

3.3 Regional Planning Context

3.3.1 Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031

The *Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031* (RSES) is a strategic plan and investment framework to shape future development and to

better manage regional planning and economic development throughout the Eastern & Midland Region.

The RSES includes a strategic plan for Dublin, the Metropolitan Area Strategic Plan (MASP). To achieve the Vision the MASP identifies a number of Guiding Principles for the sustainable development of the Dublin Metropolitan Area including Compact sustainable growth, which aims to:

> *"**Promote consolidation of Dublin city and suburbs, refocus on the development of brownfield and infill lands** to achieve a target of at least 50% of all new homes within or contiguous to the existing built up area in Dublin and at least 30% in other settlements."*
>
> [**Our emphasis**.]

The RSES includes Policy RPO 5.5 which focuses on housing delivery. It states:

> *"RPO 5.5: Future residential development in the Dublin Metropolitan Area shall follow a clear sequential approach, with a **primary focus on the consolidation of Dublin and suburbs**, supported by the development of Key Metropolitan Towns in a sequential manner as set out in the Metropolitan Area Strategic Plan (MASP) and in line with the overall Settlement Strategy for the draft RSES. Identification of suitable residential development sites shall be supported by a quality site selection process that addresses environmental concerns."*
>
> [**Our emphasis**.]

3.4 Local level - *Dún Laoghaire Rathdown County Development Plan 2022-2028*

3.4.1 Core Strategy

The Core Strategy, which forms part of the Development Plan (contained in Chapter 2), articulates the medium-to-longer term quantitatively based strategy for the spatial development of the *Dún Laoghaire-Rathdown area.* In this regard, the Development Plan states that:

> *"The central focus of the Core Strategy is on residential development and in ensuring that there is an acceptable equilibrium between the supply of zoned, serviced land for the projected demand for new housing, over the lifetime of the Plan. As set out in Section 10(2A) of The Act, the Core Strategy shall inter alia:*
>
> - *Provide relevant information to demonstrate that the Development Plan and the Housing Strategy are consistent with the NPF, RSES and with specific planning policy requirements (SPPRs) specified in Section 28 Guidelines.*
> - *Take account of any policies of the Minister in relation to national and regional population targets.*

- *Provide details in respect of the area in the Development Plan already zoned for residential and mixed-use zonings and the proposed number of housing units to be included in the area.*
  Provide details in respect of the area in the Development Plan proposed to be zoned for residential use and mixed-use zonings and how the zoning proposals accord with national policy that development of land shall take place on a phased basis.
- *Set out a settlement hierarchy for the area of the Development Plan.*
- *Provide relevant information to show that, in setting out objectives for retail development the Planning Authority has had regard to any Section 28 Guidelines".*

Furthermore, the Core Strategy examines the following factors; population growth trends, population projections for the Core Strategy, housing delivery, planning and construction activity, evaluation of housing demand, housing target for the Core Strategy, and Residential Development Capacity Audit.

As part of the Core strategy, it is an objective to prepare a HNDA analysis, as outlined in policy objective CS1:

> *"It is a Policy Objective to accord with the Housing Strategy and Housing Needs Demand Assessment 2022—2028 and to carry out a regional HNDA post adoption of the Plan and to consider varying the Plan if required. (Consistent with NPO 37 of the NPF)"*

The Core Strategy Housing Target, as shown in Table 3.2 below, provides a housing target of 20,669 units for Dún Laoghaire-Rathdown for the period of 2020-2028.

Table 3.1: Core Strategy Housing Target. (Source: *Draft Dún Laoghaire Rathdown County Development Plan 2022-2028, as amended*.)

	2016	Q1 2028 – RSES High Growth Scenario
Population	218,000	256,125
Increase in Population	N/A	38,125
Total Housing Stock	86,962	110,969
Housing Target (2016 – Q1 2028)	N/A	24,007
Minus CSO Housing Completions (2017 – Q1 2021) + Estimated Completions Q2 2021 – Q1 2022)	N/A	5,492
Housing Target (Q2 2022 – Q1 2028)	N/A	18,515

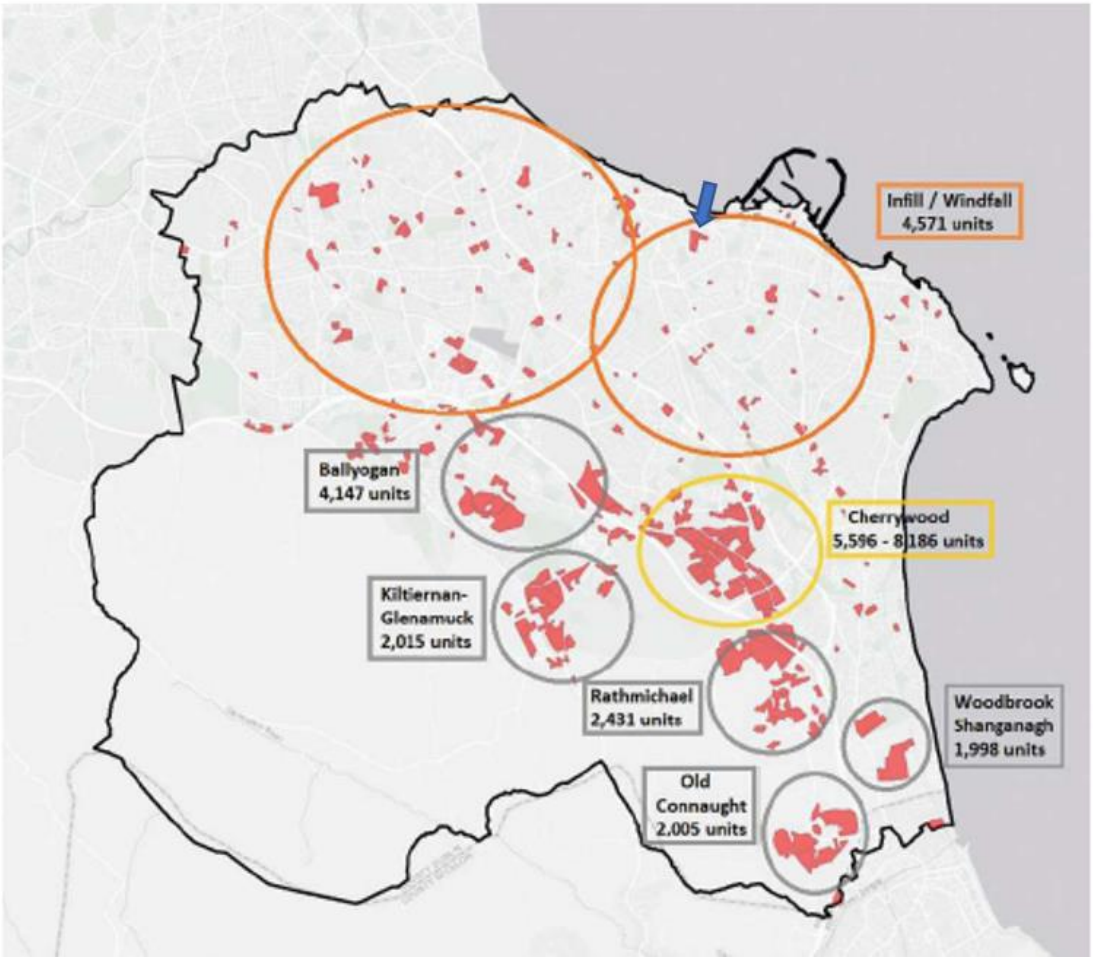

Figure 3.2: Residential Development Capacity Audit – Aggregate Data. (Source: *Draft Dún Laoghaire Rathdown County Development Plan 2022-2028*.)

3.4.2 Land Zoning Objective and Designations

This site is zoned objective 'A' in the *Dún Laoghaire-Rathdown Development Plan 2022-2028*. The objective of this land use zoning is *"To provide residential development and/or protect and improve residential amenity."*

'Residential is a '*Permitted in Principle'* use, and *Residential – Build to Rent* is an '*Open for Consideration'* use.

The non-residential uses proposed as part of the development include: *Childcare Service* (i.e., the Childcare Facility) and *Restaurant.* These uses are *'Permitted in Principle'* or *'Open for Consideration',* respectively under the zoning objective. The remaining 'Other Uses' including residents' lounge, gym, co-working spaces and management offices are ancillary to the Build to Rent residential units.

The northern edge of the site, consisting of a section of the existing entrance Avenue and the Entrance Lodge, falls within the *Monkstown Architectural Conservation Area*. Dalguise House is a Protected Structure (RPS No. 870) located in a central position within the site. The Zoning Map 3 includes a number of objectives "*to protect and preserve trees and woodlands*".

Figure 3.3: Extract from the Development Plan, illustrating the zoning objective and policy designations associated with the application site (site boundary in red).

4.3 Homes

In accordance with the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES), to achieve compact growth, 50% of housing must be provided for within the built-up area of Dublin City and Suburbs. In addition to the policy support for increased housing delivery in Dublin, as outlined within the Core Strategy, this section sets out a number of key Development Plan policies relevant to new housing in order to achieve compact growth

Residential Density

Section 4.3.1.1 of the Development Plan relates to residential density and contains Policy PHP18: Residential Density which states the following:

> *"It is a Policy Objective to:*
>
> - *Increase housing (houses and apartments) supply and promote compact urban growth through the consolidation and re-intensification of infill/brownfield sites having regard to proximity and accessibility considerations, and development management criteria set out in Chapter 12.*
> - *Encourage higher residential densities provided that 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 the need to provide for high quality sustainable residential development".*

Densification of Residential Areas

Section 4.3.1.2 of the Development Plan supports the densification of existing built-up areas and contains **Policy PHP19: Existing Housing Stock – Adaptation,** which states:

> *"It is a Policy Objective to:*
> - *Conserve and improve existing housing stock through supporting improvements and maladaptation of homes consistent with NPO 34 of the NPF.*
> - *Densify existing built-up areas in the County through small scale infill*
> - *development having due regard to the amenities of existing established residential neighbourhoods".*

Protection of Existing Residential Amenity.

Section 4.3.1.3 of the Development Plan supports the protection of existing residential amenity and contains **Policy Objective PHP20: Protection of Existing Residential Amenity**, which states:

> *"It is a Policy Objective to ensure the residential amenity of existing homes in the Built-Up Area is protected where they are adjacent to proposed higher density and greater height infill developments".*

Housing Mix

Section 4.3.2.3 of the Development Plan relates to housing mix and contains **Policy PHP27: Housing Mix** which states:

> *"It is a Policy Objective to encourage the establishment of sustainable residential communities by ensuring that a wide variety of housing and apartment types, sizes and tenures is provided throughout the County in accordance with the provisions of the Housing Strategy and Housing Need Demand Assessment (HNDA) and any future Regional HNDA."*

Social Housing (Part V)

Section 4.3.2.7 of the Development Plan relates to Social Housing and contains **Policy PHP31: Provision of Social Housing** which states:

> *"It is a Policy Objective to promote the provision of social housing in accordance with the Council's Housing Strategy and Government policy as outlined in the DoHPLG 'Social Housing Strategy 2020'. The Affordable Housing Act 2021 provides for 20% for social and affordable homes."*

Build-to-Rent

Section 4.3.2.4 of the Development Plan contains **Policy Objective PHP28: Build-to Rent and Shared Accommodation/Co-living Developments** which states:

> *"It is a Policy Objective to facilitate the provision of Build-to-Rent in suitable locations across the County and accord with the provisions of 'Sustainable Urban Housing: Design Standards for New Apartments', 2020 (and any amendment thereof). Proliferation of Built to rent should be avoided in any one area. As the HNDA does not support provision of shared accommodation there shall be a presumption against granting planning permission for shared accommodation/co-living development".*

Healthy Placemaking

Section 4.4.1.1 of the Development Plan contains **Policy Objective PHP35: Healthy Placemaking,** which states:

> *"It is a Policy Objective to:*
> - *Ensure that all development is of high quality design with a focus on healthy placemaking consistent with NPO 4, 26 and 27 of the NPF, and RPO 6.1, 6.12, 9.10 and 9.11 of the RSES.*
> - *Promote the guidance principles set out in the 'Urban Design Manual – A Best Practice Guide' (2009), and in the 'Design Manual for Urban Roads and Streets' (2013).*
> - *Ensure that development proposal are cognisant of the need for proper consideration of context, connectivity, inclusivity, variety, efficiency,*

distinctiveness, layout, public realm, adaptability, privacy and amenity, parking, wayfinding and detailed design".

Public Realm Design

Section 4.4.1.3 of the Development Plan contains **Policy Objective PHP37: Public Realm Design,** which states:

"It is a Policy Objective that all development proposals, whether in established areas or in new growth nodes, should contribute positively to an enhanced public realm and should demonstrate that the highest quality in public realm design is achieved".

Building Design and Height

Section 4.4.1.3 of the Development Plan contains **Policy Objective PHP42: Building Design & Height,** which states:

"It is a Policy Objective to:

- *Encourage high quality design of all new development.*
- *Ensure new development complies with the Building Height Strategy for the County as set out in Appendix 5 (consistent with NPO 13 of the NPF)".*

3.6 Planning History of the Site

One previous application, lodged under ABP Reg. Ref. 30694920, has been made in respect of the subject site: a Strategic Housing Development (SHD) of 300 No. units, subsequently reduced by ten in the Permission to comprise 266 No. apartment units across 8 No. blocks, ranging in height from 5 to 9 storeys, and 24 No. houses, including within the existing structures on the site (total 290 No. units). A creche was also provided under the application, as well as communal recreational facilities and 314 No. car parking spaces and 654 No. bicycle parking spaces.

In addition to the existing vehicular and pedestrian access, it was proposed to provide a further access to Monkstown Road, via Purbeck, and to facilitate additional pedestrian/cycle connects to adjoining roads to the east and west. The scheme was for 'conventional' residential units – not BTR.

The Application was granted by An Bord Pleanála, subject to 31 No. conditions. This included a condition requiring a reduction in height (by one storey) of 2 No. blocks. The condition meant the removal of 10 No. apartments, reducing the overall number of dwelling units to 290 No. The decision was subject to Judicial Review and was subsequently overturned by the High Court. According to the Judgment, the Judge found that ABP had erred in their conclusion that the submitted EIA Screening Report adequately described the effects that the proposed development would have on the environment. He also found that ABP had not given adequate reasons for its EIA Screening decision that the proposed development would have an insignificant effect on cultural heritage. The Judge further held that in its decision to grant permission ABP erred by relying on a Specific Planning Policy Requirement concerning building

height guidelines and found that the height of the proposed development did materially contravene Dún Laoghaire-Rathdown's building height policy.

In light of the foregoing, the Design Team have reviewed the previously permitted development in order to improve the design where possible, and to ensure that the development can be constructed as proposed and can adapt the principles of the development to meet their requirements as the owner and developer of Build to Rent developments. Furthermore, the Design Team have carefully reviewed the High Court judgement on the previous scheme and is preparing this comprehensive EIAR to ensure that the application provides a robust assessment of any potential environmental effects of the proposed development on the environment. In relation to the Building Heights, the *Dún Laoghaire Rathdown Development Plan 2022-2028* Building Height Strategy acknowledges that greater height can be provided on lands where it can be demonstrated that the proposal complies with criteria outlined in Table 5.1 under Section 5 of Appendix 5, Building Height Strategy. The accompanying Town Planning Report, prepared by TPA provides a detailed assessment of the proposed development in relation to the 'Performance Based Criteria' outlined in Table 5.1 of the Building Height Strategy to ensure that the proposed heights are in accordance with the Development Plan.

3.7 Surrounding Development Projects

A number of development projects in the surrounding area have been identified as relevant to the assessment of environmental impacts associated with the proposed project, from a cumulative perspective. The methodology surrounding the selection of the below projects, which are located within a spatial limit of c. 2km radius of the site boundary, is detailed in Chapter 21 of this EIAR. Figure 3.7 shows the identified projects on a map.

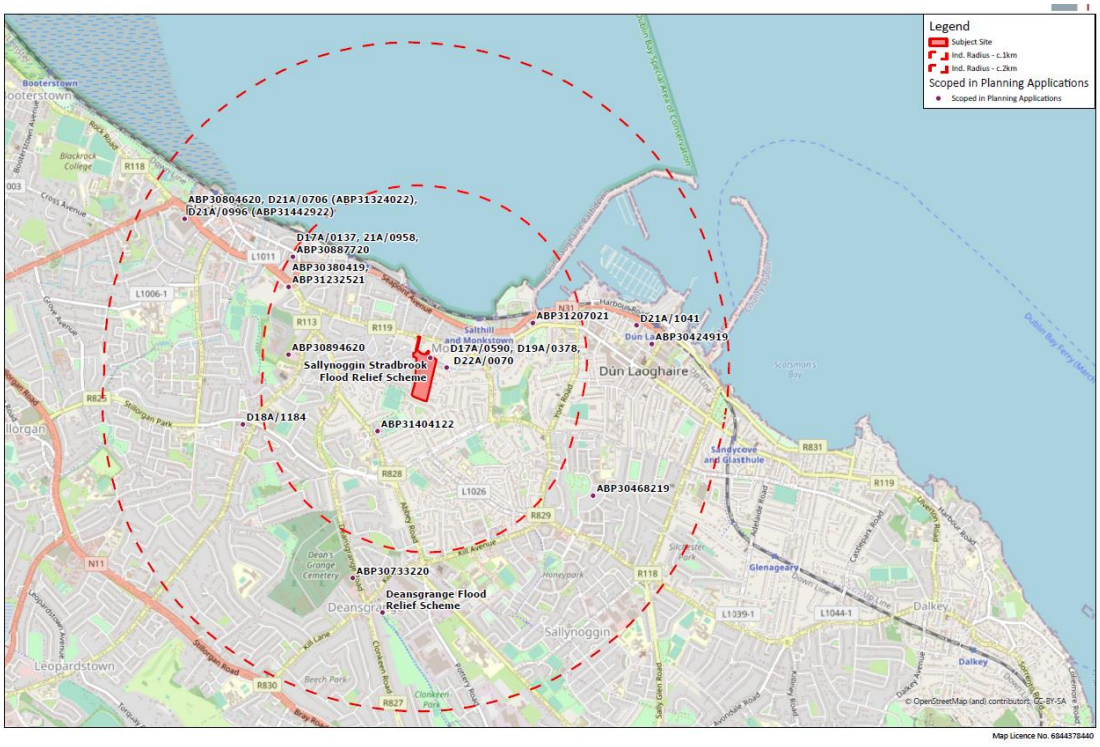

Figure 3.7: Map showing surrounding development selected for the purposes of cumulative impact assessment.

3.7.2 Committed (Permitted/ Under Construction) Projects

The below projects have been granted planning permission by Dún Laoghaire-Rathdown County Council (DLRCC) or An Bord Pleanála (ABP) within the last 5 years (2017-2022). Each of these projects represent developments which consist of 50 residential units or more. These represent both mixed-use and residential developments, granted either through Section 34 process directly to DLRCC, through Strategic Housing Development (SHD) applications directly to ABP, or granted by ABP following either first- or third-party appeals. This list includes applications within a 2km radius of the subject site at Dalguise House.

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development	Distance to Dalguise House
D17A/0590+ABP-301533-18	Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	12th April 2018. Granted after appeal on 7th January 2019	Residential development consisting of the demolition of the existing nursing home and 5 no. studio apartments and the construction of a total of 56 no. residential units in 2 no. apartment blocks 76 car parking spaces, 5 motorcycle spaces and 41 bicycle spaces; 5 visitor car spaces and 26 bicycle spaces at surface level	Adjoining Dalguise House: < 50 metres
D19A/0378+ABP-305843-19	Former Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	05 Jun 2019. Granted after appeal on 26th May 2020	Permission for revisions to a residential development previously permitted under Reg. Ref. D17A/0590 / ABP-301533-18. 72 no. residential units in these 2 no. apartment blocks. 79 car parking spaces, 7 motorcycle spaces and 64 bicycle spaces	Adjoining Dalguise House: < 50 metres

ABP30380419	St. Teresa's House/Centre and St. Teresa's Lodge (Protected Structures), Temple Hill, Monkstown, Blackrock, Co. Dublin.	10th June 2019	294 no. apartments, conversion of St. Teresa's House, dismantling and relocation of St. Teresa's Lodge,	1.2 km
ABP31232521	3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin	14th April 2022	New residential and mixed use scheme of 493 residential units Including the subdivision, conversion and re-use of 'St. Teresa's House' the dismantling, relocation and change of use from residential to café of 'St. Teresa's Lodge' within the site development area.	1.2 km
ABP30887720	Former Europa Garage Site, Newtown Avenue, Blackrock, Co. Dublin	12th April 2021	Development of 101 no. apartments	1.3 km
D17A/0137	Newtown Avenue, Blackrock, Co. Dublin. This site is known as the 'Former Europa Garage site'	12th April 2017 (after appeal)	Demolition of the garage buildings on site. The residential scheme shall provide for 51 no. residential units	1.3 km
D21A/0958	Former Europa Garage Site, Newtown Avenue, Blackrock, Co Dublin	20th April 2022	Residential development providing 91 residential units	1.3 km
ABP-304682-19	Previously permitted Blocks 2 and 3, Cualanor, Glenageary, Upper Road, Co. Dublin.	30th August 2019	368 no. apartments and associated site works.	c.1.3km

ABP30894620	Lands adjacent and to the rear of Cluain Mhuire Family Centre, Newtownpark Avenue, Blackrock, Co. Dublin	15th April 2021	Demolition of a single storey shed, construction of 140 no. apartments	1.4 km
ABP-304249-19	Old School House, Eblana Avenue, Dun Laoghaire, Co. Dublin.	26th July 2019	Demolition of existing buildings on site, construction of 208 no. Build to Rent Shared Living Residential Development, cafe/kiosk and associated site works.	c.1.5km
ABP-308046-20	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	16th December 2020	Alterations to Phase 1 permission for 45 no. apartments from second to fourth floor permitted under Reg.Ref: D17A/0950 and ABP-300745-18 to include the provision of 57 no. additional apartments as an extension to Phase 1, the subject application relates to a total of 102 no. apartments.	c.1.85km
D21A/0706 + ABP -313240-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	Granted 15th March 2022. 3rd party appeal to ABP lodged 5th April 2022.	The proposal relates to a Phase 2A residential development of 41 no. apartments and the allocation of 60 no. car spaces.	c.1.85km
ABP30733220	Dean's Grange Road, Deansgrange, Co. Dublin	20th September 2020	Demolition of existing buildings, construction of 151 no. apartments	1.9 km
D18A/1184+ABP-305265-19	Junction of, Fleurville Road and, Newtownpark	29th July 2019. Granted	Residential development	2 km

	Avenue, and abutting, Annaville Avenue to the east, Blackrock, Co. Dublin	after appeal on 13th Feb 2020	consisting of 68 no. apartments	

3.7.2 Planned Projects

The below projects are planned projects that are at various stages of the planning process. The key distinction from the projects listed above is that they do not have planning permission at the time of writing. Each of these projects represent developments which consist of 50 residential units or more. These represent both mixed-use and residential developments, granted either through Section 34 process directly to DLRCC, through SHD applications directly to ABP, or granted by ABP following either first- or third-party appeals. This list includes applications within a 2km radius of the subject site at Dalguise House.

DLRCC/ ABP Reg. Ref.	Address	Lodgement Date/ Status	Overview of Development	Distance to Dalguise House
D22A/0070 + ABP-313363-22	Richmond Cheshire Home, Richmond Park, Monkstown, Co. Dublin	Planning Application Lodged 31st January 2022. Refused by DLRCC and is now subject of a first party appeal to ABP.	Residential development comprising of 96 no. apartment units	Adjoining subject site: <50 metres
N/A	Stradbrook/Sallynoggin Streams	Tender documents for a CCTV and flow survey have been prepared which is envisaged to be completed during winter 2021-2022.	Roughan & O'Donovan Consulting Engineers (ROD) has been commissioned by Dún Laoghaire – Rathdown County Council (DLRCC) to prepare Flood Alleviation Options (FAO) for the Stradbrook and	Runs through subject site

			Sallynoggin Streams.	
ABP-314041-22	Lands located at and adjoining Stradbrook House, Stradbrook Road, Mountashton, Blackrock, Co. Dublin.	Planning Application lodged 11th July 2022	Demolition of the existing Stradbrook House and adjoining surface car park, and the construction of 108 No. Build-to-Rent residential senior living apartments	0.5 km
ABP31207021	The former Ted Castles site and Dun Leary House (a Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary	Planning Application Lodged 26th November 2021.	'Build to Rent' strategic housing development consisting of the construction of a new development of 146 no. units	1.4 km
D21A/1041	St. Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, County Dublin, A96 TN26	3rd Party Appeal lodged against decision to grant on 8/8/22.	Mixed use development of 88 no. Build to Rent residential apartments, commercial unit and café across 2 buildings.	1.4km
N/A	Deansgrange Stream	Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts	Improvements to the flood defence regime	1.6km at closest point
D21A/0996 + ABP-314429-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	3rd Party Appeal lodged against decision to grant on 22/08/22.	The proposal relates to a Phase 3 residential development of 98 no. apartments and all associated site works.	c.1.85 km

4.0 CONSIDERATION OF ALTERNATIVES

4.1 Introduction

This Chapter provides *'a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'* as required by Schedule 6 of the Planning and Development Regulations, 2001 (as amended).

This Chapter has been prepared by Eoghan O'Brien of Reddy Architecture and Urbanism. He is a registered Architect with the Royal Institute of the Architects of Ireland (MRIAI No. 18067) with 10 years' experience in housing and residential architecture.

The preparation of this Chapter has had regard to the Guidelines on the Information to be Contained in Environmental Impact Statements, May 2022. Regard has also been had to the previous EPA Guidance, to the European Commission Impact Assessment Guidelines, 2017, and EIA Directive 2014/52/EU, which states that information for the Environmental Impact Assessment Report should include:

> *'a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer.'*

The European Commission Guidelines summarise that the Developer needs to provide:

- A description of the reasonable alternatives studied; and
- An indication of the main reasons for selecting the chosen option with regard to their environmental impacts.

The principal rationale for the development proposal is outlined in this section, to provide context for the proposed development and the selection of the proposed development site. The section goes on to identify the reasonable alternatives considered in terms of size and scale, and the environmental factors considered in respect of each alternative and the main reasons for select the option chosen. The identification of reasonable alternatives has been carried out in the context of the nature and scale of the development proposed being predominantly residential, together with the established regulatory context.

4.2 Legislative Context

Article 5 (1) of the 2014 Directive requires the consideration of reasonable alternatives which are relevant to the project and take into account the effects of the project on the environment. It states under Article 5 (1) that;

> *"Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least…"*
>
> *"…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."*

Schedule 6 of the Planning and Development Regulations, 2001 (as amended) sets out the information which is to be contained in an EIAR and Part 1 (d) of Schedule 6 states that the following shall be included:

> *"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."*

In accordance with draft EPA Guidelines, different types of alternatives may be considered at several key stages during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

The EPA Guidelines (Draft) states:

> *"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option".*

It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required." The consideration and examination of alternatives is set out below.

4.3 Alternatives Examined

4.3.1 *'Do-Nothing'* Alternative

Figure 4.1: 3D view of existing site.

A 'do-nothing' alternative has been considered in respect of the site. It was found to represent an unsustainable and inefficient use of strategically important lands for the delivery of residential development, as reflected by the land zoning objective and Core Strategy contained within the *Dún Laoghaire-Rathdown County Development Plan 2022-2028.*

The subject site has all the attributes required to deliver much needed housing within the Greater Dublin Area, it is a large site (c.3.58ha) and located within walking distance to the centre of Monkstown Village. It is also well served by public transportation with Salthill and Monkstown DART station within 700m of the site and a number of Bus services running along Monkstown Road at the front of the site.

To 'do-nothing' on a site with such advantages would contravene national planning framework in which government policy states that local authorities *'support increased density in locations with good public transport, accessibility, particularly town / city cores'* (SPPR1-Urban Development and Building Height Guidelines, 2018)

The Site is also zoned under Objective A which states *'"To provide residential development and improve residential amenity while protecting the existing residential amenities"* in the DLR Development Plan 2022-2028.

Clearly the site is well served in an attractive area with plentiful amenities and transport and do nothing would be an inappropriate and unsustainable approach in the current context of severe housing pressures in Dublin.

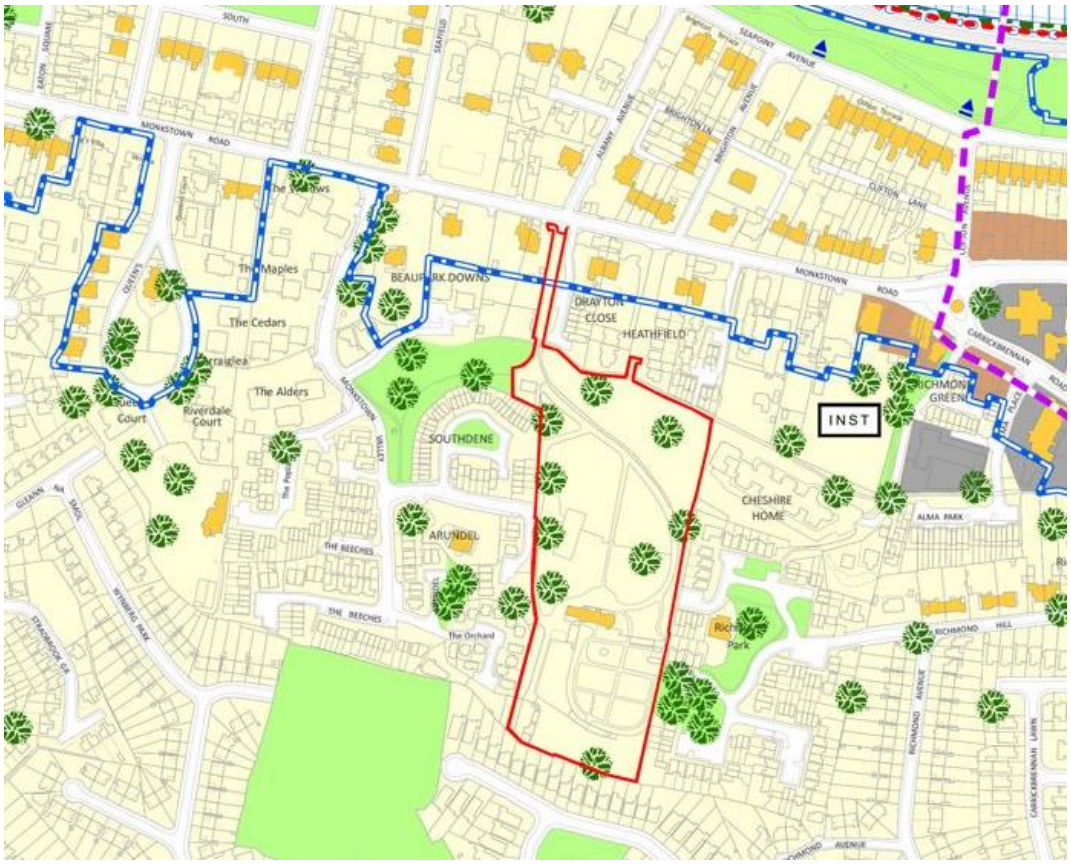

Figure 4.2: DLRCC Development Plan Zoning Strategy.

From an environmental perspective, the 'do-nothing' alternative has been considered in respect of each environmental factor throughout this EIAR. In population and human health terms, if the development was not built, negative impacts would likely arise in respect of the non-provision of housing, the associated local services and community and public open space provision. In the 'do-nothing scenario', it is also expected that negative impact would arise in respect of the existing buildings and grounds on the basis that there would be very significant risk of the Heritage structures suffering deterioration from lack of use and maintenance, and from the increased susceptibility to vandalism. The Protected Structure and curtilage will survive through active management, which would likely cease if a 'do nothing' scenario was applied.

Further to this, the 'do-nothing' scenario is likely to be neutral in environmental terms, in respect of land, soils, geology and hydrogeology, noise and vibration, townscape and visual impact assessment, archaeology and cultural heritage, waste, built services and roads and traffic.

In relation to biodiversity, if the site was to remain undeveloped, it is expected that the biodiversity value would increase as a result of neglect or a reduction in maintenance of the site.

However, as a result of the zoning of the lands and the specific reference to the strategic importance of the site from a residential capacity perspective contained within the Development Plan, together with consideration of the proximity of the lands and accessibility

to Dublin City and significant employment locations, the 'do-nothing' scenario was discounted.

With the mitigation measures proposed in this EIAR and having regard to the findings that no significant effects on the environment are expected with such measures in place, the comparative environmental effects are not considered sufficient to rule out proceeding with the proposed development.

4.3.2 Alternative Locations

The subject site of c. 3.58 hectares lies on an existing residential property within the built-up area of Monkstown approximately 1.5 km west of Dún Laoghaire town centre and c. 1.5 km southeast of Blackrock village. The site is within walking distance of Monkstown Village, c 250 m, which provides a range of local services. The proposed site was specifically identified by the applicants, Greystar, who were seeking an appropriate location in the Dublin Region for their flagship development, which is intended to set a gold standard for long term residential communities in the country.

The convenient location and its proximity to high quality public transport was a key factor in the site selection. The site is located less than 400 metres from the Salthill and Monkstown Dart Station. There are also a number of bus stops within 200 metres of the site, served by routes 7 and 7A, which connect the site to Mountjoy Square to the north to Brides Glen Luas/Loughlinstown. A further bus stop at Temple Hill (c. 800 m to the west) is served by routes 4; 46E; 84; 84A. Furthermore, as per the *Dún Laoghaire-Rathdown County Development Plan 2022-2028*, there are existing and proposed bus priority routes within 1km of the site.

It was considered that this site with its size, setting and location is uniquely suited to create a high-quality scheme in an area with a very high demand for long term residential accommodation. The dominant tenancy in the Monkstown area is that of owner occupier and there are very few apartments and / or houses available for the rental market. The proposed development represents immense potential to alleviate pent up rental demand in the South Dublin area and could cater for a vibrant mix of young professionals and older 'size-down' tenants to live in an area of high demand. It was found that there is a finite number of suitable sites of comparable quality and size available in the southeast Dublin region, close to public transport that would have the capacity for the delivery of a scheme of this nature. See report by '*Housing Market Report*' KPMG that accompanies this application for further details.

This site is zoned objective 'A' in the *Dún Laoghaire-Rathdown Development Plan 2022-2028*. The objective of this land use zoning is *"To provide residential development and/or protect and improve residential amenity." Residential* is a '*Permitted in Principle'* use, and *Residential – Build to Rent* is an '*Open for Consideration'* use. The non-residential uses proposed as part of the development include: *Childcare Service* (i.e., the Childcare Facility) and *Restaurant.* These uses are *'Permitted in Principle'* or *'Open for Consideration',* respectively under the zoning objective. The remaining 'Other Uses' including residents' lounge, gym, co-working spaces and management offices are ancillary to the Build to Rent residential units.

The planning policy provisions at all tiers support the redevelopment of the subject lands in line with the above land zoning objective, the location of the lands in an existing built-up area and the scale of the lands which provides capacity for a significant number of new homes. As such, from a planning perspective, the site is considered appropriate for a development of the proposed nature and will deliver much needed housing, in line with an identified national priority.

In addition to the above planning considerations, the following environmental considerations were undertaken in respect of the subject lands in relation to their suitability for a higher density residential development. The key considerations are noted and discussed below.

- Proximity to public transport and pedestrian and cyclist infrastructure;
- Proximity of surrounding local road network to regional and national roadwork (for construction traffic access);
- Availability of social infrastructure and services;
- Built up/ urban surrounding landscape (townscape);
- Availability of utilities, water, electrical and gas infrastructure;
- Proximity to existing population.

Having regard to the considerations outlined above, the subject site was considered to be a suitable location for the proposed development for the following reasons:

- The connectivity of the subject site with the regional and national road network, public transport provision and existing social infrastructure was considered to have the potential to contribute to reduced transport emissions and associated noise and air quality impacts that could arise from a residential development.
- The availability of utilities, water, electrical and gas infrastructure provides opportunity to connect into existing services and infrastructure (subject to capacity), avoiding significant and further reaching construction activities associated with the introduction of new piped infrastructure etc. It is considered that this has the potential to reduce impact upon the land, soils and local biodiversity.
- The location of the lands in an existing urban built up area and close proximity to Monkstown, Dún Laoghaire town centre and Blackrock village is considered to provide potential for positive impacts surrounding the population, including employment opportunities at the construction and operation stage. It is also considered that the site is well located to provide benefits to the existing local population in relation to local facilities and amenities, public open space and community uses. It is also considered that the proposed extensive open space, along with food and beverage offering will benefit the wider community.
- In landscape and visual terms, whilst the site is identified as having notable heritage and natural assets, the characteristics of the existing surrounding context (urban/ built up) is considered to have the potential to absorb further development.

In summary, having regard to the environmental considerations above, the proposed location is considered to be appropriate for a development of the proposed scale and nature.

4.3.3 Alternative Design and Layout

Several reasonable alternative layouts for the proposed development were considered over the design process. The proposals for the development were subject to detailed discussion with the Planning Authority prior to the principles of the proposed layout being finalised.

In the following chapter we will show the progression of the scheme over several meetings with the local authority responding to the urban design, form, massing, height, and design quality of the proposed development. Alternative heights, materiality and rhythm were also assessed by the Design Team leading to a much more considered and appropriate response to this unique site. The following alternatives will be described in this chapter:

- **Alternative Design 01:** *Previous Planning Permission Ref. No. Ref. 306949-20*
- **Alternative Design 02:** *Scheme as presented at pre-S247 meeting*
- **Alternative Design 03:** *Proposed Scheme*

4.3.3.1 Alternative Design 01 – Previous Planning Permission Ref. No. Ref. 306949-20

Figure 4.3: Previous Planning Site Layout.

The figure above shows the site layout plan for the previous planning application submitted in 2020. This design comprises 290 No. units, a childcare facility and associated development. The 8 No. new apartment blocks (266 No. units) ranged in height from 5-9 storeys, some over podium level. 22 No. houses were included (including the converted stable yard and refurbishment of an existing gate lodge). Dalguise House was to be converted into 2 No. residential units and a childcare facility at basement level. The scheme also provided 314 No. Car Parking spaces and 365 No. bicycle spaces. As part of the design process, the design team reviewed the design, considered the positive design decisions to be brought forward into the next iteration and discounted the elements that didn't work.

Positive Elements of the proposal:

- The overall composition of linear Blocks in the central area is the optimal configuration for the apartment blocks as this allows for an east / west orientation and creates views to Dalguise House from the access road.
- The creation of a plaza in front of Dalguise House and the primacy of the house within the overall setting.
- The Pavilion style Blocks at the north of the site was considered the correct response to this part of the site in terms of scale and form.
- The creation of distinct character areas across the site as follows:
  - Zone A (Purbeck): Pedestrian link is positive, however the design is congested and tree loss is quite large.
  - Zone B (Central lawn): The creation of more formal lawn in front of Dalguise House with a plaza in front of the house is considered positive.
  - Zone C (south of Dalguise) Walled Garden: with the retention of the existing limestone curved wall at the south of the site creating an enclosed garden

Areas identified for improvement:

- The creation of 3 separate basements across the site was deemed too intensive.
- The resulting vehicular strategy was deemed too intensive and would create a very busy access road and would necessitate a significant widening of the historic access road.
- The position and design of Block D and Block E has left the blocks too close with overlooking and overshadowing issues. The position and design also interferes with the views to Dalguise House.
- The exit road at the north of Block A results in a considerable loss of category A and category B trees (see arborist report for more details)
- Access to the site for pedestrians and cyclists is not considered enough with all traffic entering the scheme from 1 entrance.
- The 11no semi-detached housing at the south of the site was deemed monolithic and reads like a wall of development on to Brook Court.

This option was discounted due to issues with proximity between blocks, overlooking to neighbours and unit-mix. The understanding of the existing landscape as part of the Protected Structure, undermining the need to widen the existing historic lane and the issue of emergency access on the walled garden area. The topography and steep nature of the site at Block A and response to this condition was also deemed to be an issue and would result in more tree loss and the inclusion of a steep road around the front of Block A which reduced the green space.

Landscaping Strategy

In terms of the landscaping strategy, principles from the previous planning application were carried through with regards to the layout, access, the retention of existing boundaries as far as possible and the use of natural play and raised decking in certain areas to avoid impacting tree root zones.

However, the following significant changes were applied by the landscape team to improve on the overall scheme:

- The historic avenue's existing width has been retained where possible, with occasional widenings to allow for passing vehicles, resulting in less impact on the trees in this area. This has been made possible as the main vehicular access is through Purbeck into the basement and therefore the historical avenue will be a shared surface.
- The traffic has been diverted into the basement rather than up around the northwest part of the scheme, which has allowed the retention of more trees in this area.
- Additional potential connections have been introduced to surrounding neighbourhoods.
- A more organic design fitting to the site's character, with defined views towards Dalguise House has been created on the site.
- More 'magic moments' which celebrate the site's setting and assets have been created – such as the mature trees and bird life - for the public and residents to enjoy
- The biodiversity has been enhanced on site through the provision of various elements – edible food forest within the walled garden, biodiverse pond and swales with associated planting, native planting, bird and bat boxes, eco-poles.
- The landscape architects have worked hand in hand with the arboriculturist trying to retain as many high value trees as possible, while being realistic as to what can be achieved.
- Proposed trees will be a range of mature and semi-mature trees so that the landscape looks mature from day 1 and fitting with the rest of the trees on site.
- Various different SUDs features which work with the landscape amenity have been introduced on site.
- Moments of elevated play to reduce impact on trees while maximising the function of the site have been introduced on the site.

Traffic and Access Strategy

The previous scheme proposed two way accesses at both Purbeck and Dalguise House Access. The former required severe gradients requiring significant removal of trees to meet the Dalguise House Access. The scheme included provision for permeability connections to surrounding land to improve overall connectivity for sustainable modes in the area.

Figure 4.4: Isometric View of Alternative design 01

4.3.3.2 Alternative Design 02: Scheme as presented at pre-S247 meeting

Following on from the previously submitted scheme in 2020 the design team brought forward the positive aspects from this iteration, they included :

- The orientation / footprint of Blocks E,F,G,H,I,J.
- The central basement accessed via Purbeck.
- The 'Mews' style apartments at the southern end of the site.
- The Pavilion style apartment Blocks A,B and C.
- Shared access along the main avenue with additional smaller linkages within the site.
- The team then improved the response whilst re-thinking the areas of concern as identified above.

Figure: 4.5 Site Layout of Design Option 02

This new proposed scheme comprises 11 no. new apartment blocks ranging from 3-9 storeys and the full restoration of 4 existing structures of which the only Protected Structure is the Dalguise House being converted into Residential at level 01, residents' amenity at ground level and a public F+B offering at lower ground level.

The Site is divided into 4-character areas, the first is Purbeck to the north of the site, the Blocks are designed as pavilion blocks with the apartments wrapped around a central core. In the Central Lawn area, the Blocks are all designed as linear blocks to take advantage of the east/west orientation and maximise the daylight results. The walled garden area is designed as an enclosed spaces with Blocks J and H designed as split-level linear blocks. The South of the site is the Mews area with Blocks I slightly curved, following the curvature of the existing limestone wall.

The Key statistics for this iteration are:

- 482 Apartments
- 219 Car Parking Spaces

- 1000 Bicycle spaces
- 52% Dual Aspect
- 22% Site Coverage
- .98 Plot Ratio

The main overall design changes from the previous iteration are as follows:

- A central basement accessed via Purbeck and located under Blocks D,E,F,G. This removed the road around the north of Block A to the access road improving the setting of Block A and the front of the site.
- Blocks A, B + C have been positioned in order to minimise any negative impact on the existing mature trees.
- Blocks D+E have been re-designed as linear blocks making the internal configuration more efficient and allowing views towards Dalguise House as one moves along the access route.
- The Central Courtyard is arranged in a more formal pattern in response to the setting of the historic Dalguise House.
- Internal re-configuration of Blocks F, G and H which improved efficiencies and the daylight into the block.
- The impact of the design and construction methodology has been tested more rigorously in this iteration. To mitigate damage Block A has been re-oriented, the road to the north of Block A has been removed. The location of piles and excavation has also been considered and fed into the overall design response.
- The organisation of the site into 5 character areas: Purbeck, Access Road, Central Lawn, Walled Garden and Mews area.
- The creation of a much smaller scale mews typology at the south of the site which allows for much more generous landscaping around.
- The creation of an F+B offering at the lower ground floor of Dalguise House with a southerly aspect and views to the Walled Garden.
- The creche formerly located in Dalguise House is now moved to Block A, allowing easier access to the creche and bringing the facility closer to the neighbouring areas.
- The addition of a full amenity floor at the top of Block E complete with outdoor terrace offering views to the Irish sea beyond.

Positive Elements of the Proposal

- The Mews at the southern boundary breaks down the mass to the adjoining semi-detached dwellings and creates a more open landscaped environment at this part of the site.
- The food and beverage offering at the lower level of Dalguise House creates a vibrant environment and brings the public into the heart of the scheme, connecting the proposal to the wider neighbourhood whilst also bringing employment to this part of Monkstown.

Areas identified for improvement

- Access to main car park via Purbeck is unresolved;

- Ground level Block E reads to closed, the space needs to be opened up and to act as a fulcrum and meeting point for residents and staff within the scheme;
- Blocks B/C need to be made more efficient in mass and form;
- Block D reads very abrupt to the main historic avenue. The Block could be improved in its alignment with the avenue and buildings E and G;
- The Vinery at the rear of Dalguise blocks the view to the walled garden and the path of the sun to the south-west; and
- Blocks I x 2 could be made more efficient to allow for a smaller footprint and more space in the landscape around the buildings.

Figure 4.6: Submitted application with Design iteration 02 overlaid in magenta

Figure 4.7: Section showing submitted application with Design iteration 02 overlaid in magenta.

Figure 4.8: Section showing submitted application with Design iteration 02 overlaid in magenta.

Figure 4.9 : Early design view of the scheme from Purbeck

Figure 4.10 : Proposed Scheme Central Courtyard Plan

Figure 4.11 : Proposed s247 scheme, walled garden looking north.

Figure 4.12 : Proposed Scheme Walled Garden Plan.

From an environmental perspective, this scheme was the subject of detailed considerations including the introduction of a significant quantum of new development to an existing residential area, including new homes, commercial uses and public open space. Ultimately, the scheme was amended (which resulted in the proposed project) to address the planning related concerns raised by Dún Laoghaire Rathdown County Council. However, our environmental considerations in respect of the environment factors set out in Article 3(1) of the EIA Directive are provided below.

- **Population and Human Health:** It was considered that the development would introduce a significant quantum of new development to an existing residential area, including new homes, commercial uses and public open space. We therefore identified the potential for the proposed development to impact positively upon, inter alia, population, employment and amenity. From a human health perspective, we considered the interactions between human health with air quality and noise impacts.

- **Biodiversity:** This development would result in the demolition of a number of existing buildings, the disruption and alteration of the existing and established landscape, as well as significant changes to the nature of the use of the site. Ecological survey work was undertaken to inform assessments in relation to potential impact upon habitats and flora, mammals, bats and wintering birds. In terms of potential impacts, with mitigation measures in place, the construction and operation of the proposed development will not have a significant negative impact on biodiversity in the Zone of Influence.

Furthermore, having regard to Article 6(3) of the EU Habitats Directive, due to the identification of connectivity between the application site and the Natura 2000 site in Dublin Bay UNESCO Biosphere Reserve, the Dublin Bay Important Bird Area (IBA), and the Sandymount Strand/Tolka Estuary Wetland of International Importance (WII) an Appropriate Assessment Screening and Natura Impact Statement (NIS) was submitted at the pre-application stage.
The NIS concluded:

> *"It is the considered opinion of ROD, as the author of this NIS, that, in making its AA in respect of the proposed Dalguise House Residential Development, Dún Laoghaire Rathdown County Council, as the Competent Authority in this case, may determine that, given the full and proper implementation of the mitigation prescribed in this NIS, the proposed development, either individually or in combination with other plans or projects, will not adversely affect the integrity of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC or the Dalkey Islands SPA."*

- **Land, Soils, Geology and Hydrogeology:** This development would be inclusive of both demolition and the construction of a number of new buildings and hard landscaping works. We therefore identified the potential for impacts in this regard, mainly arising from the excavation required during the construction process. Other areas of potential impact were considered to arise from the stripping of topsoil, construction traffic, accidental spills and leaks/ contamination and any interactions with human health in this regard.
- **Hydrology (Surface Water):** We identified the potential for the development to impact upon the environment in terms of hydrology, during the construction and operational phase, given the locational characteristics of the site from a hydrological perspective. In this regard, we noted that direct hydrological linkages exist between the Stradbrook Stream (located north of the proposed development site) and the Dublin Bay waterbody (EPA online site code: 00206) where a number of SACs and SPAs are situated, the closest of which is the South Dublin Bay SAC, and the South Dublin Bay and River Tolka Estuary SPA located approximately 400m and 450m respectively from the north boundary of the proposed development site. The main considerations in this regard relate to the potential impacts arising from surface water run-off during soil excavation.
- **Air Quality and Climatic Factors:** We considered the potential for air quality impacts arising from the construction stage. The greatest potential for air quality impacts was considered to arise from dust emissions and their impact upon nearby sensitive receptors. In terms of the operational phase, potential impact arising from traffic movements associated with the development was also considered.
- **Noise and Vibration:** We considered the potential for noise and vibration impacts arising from the construction of this scheme upon nearby sensitive receptors, mainly neighbouring residential properties. From an operational perspective, potential impacts were identified in

respect of changes to noise levels arising from additional traffic associated with the development. We also considered the potential for noise impact arising from Mechanical Services Plant and the creche.

- **Townscape and Visual Impact Assessment:** Given the increased height of the development when compared to the existing low-rise context, it was expected that the increased height at the site (up to 9 storeys) had the potential to impact upon the surrounding townscape which may alter its character. From a visual impact perspective, the potential for the development to change views to/ across the site was considered in the context of potential impact upon visual amenities. The existing lands were considered to have a medium sensitivity to change, having regard to the distinct sylvan character and heritage dimensions of the landscape within the site boundary.
- **Archaeology:** From an archaeological perspective, the construction of this development would involve extensive disturbance of ground and therefore would have the potential to impact upon any archaeological remains or features present at the site. The archaeological desk-based study identified the potential for archaeological features in areas where this development proposed new built form.
- **Architectural Heritage:** From an architectural perspective, the application site presents heritage value in both the existing buildings and the landscape, potential impact in this regard has therefore been considered. The development seeks the demolition of a number of buildings and ancillary built form associated with Dalguise House, the construction of new built form within the setting of identified heritage buildings, the renovation and refurbishment of heritage buildings and significant changes to the landscape.
- **Microclimate/ Wind:** We considered wind and microclimate impacts on the basis that the development, arranged in a number of blocks/ buildings at a height of 3-9 storeys, would result in significant changes to the landscape and therefore has the potential to change the microclimate and pedestrian comfort levels.
- **Roads and Traffic:** Due to the scale of this development, the construction phase was considered to have the potential to generate a notable number of additional traffic movements. Furthermore, the development was inclusive of car parking with a total of 224 no. spaces and was therefore considered in the context of potential impact arising from additional traffic movements within the area. It also includes cycle parking, and a number of new access points for vehicles, cyclists and pedestrians. The operational phase of the proposed development therefore has potential to change (and therefore impact) the nature of the surrounding area from a traffic and transport perspective.
- **Waste:** This development, both at construction and operation stage, would produce waste. We therefore identified the potential for impacts in this regard, together with the necessity for the appropriate management of waste at both stages.
- **Built Services:** Due to the nature of the development, we have considered the potential for the development to impact upon existing site services/ utilities, from both a construction and operation phase perspective. The site is serviced as existing, but it is noted that the operational development will result in an increased demand upon services such as the public watermain system. From an Irish Water perspective, the capacity of existing infrastructure to serve the development was considered in consultation with Irish Water themselves.

4.3.3.5 Alternative 03 – The Proposed Project

After the S.247 meeting, the design team listened to and responded to the issues raised by DLRCC. This iteration also comprises 11 no. new apartment blocks ranging from 3-9 storeys and the full restoration of 4 existing structures of which the only protected structure is Dalguise House being converted into Residential at level 01, residents' amenity at ground level and a public F+B offering at lower ground level.

The Key statistics for this iteration are:

- *491 Apartments total*
- *224 Car Parking Spaces*
- *1071 Bicycle spaces*
- *53% Dual Aspect*
- *22% Site Coverage*
- *1.13 Plot Ratio*

Figure 4.13: Proposed Site Layout Plan showing layout and arrangement of the Blocks.

The design changes from the previous iteration are as follows:

- The Entrance via Purbeck has been improved with the car parking moved from the surface parking to underneath Blocks B+C leaving more space for more greening and landscaping.
- A new podium has been designed as a tiered cascading landscaped connection piece allowing pedestrians direct access to Block A and the access road above directly into the site.
- The re-design and internal re-configuration of Blocks B+C to reduce the mass and create a more legible design facing Purbeck.
- The re-design and re-alignment of Block D to address the main historic avenue and improve the setting around the Block.
- The Ground Floor of Block E has been re-designed as an open plan, activated on all sites containing a Yoga Room, Gym, Lounges, Co-Working spaces, Lounges,

Foyer and associated management suite for the scheme including residents orientation, parcels etc.

- Responding to concerns raised by the Local Authority the Blocks at the southern boundary, have been reduced in footprint and moved further from the southern boundary and adjoining housing.
- Internal re-configuration the Coach House to create a private garden space and new modern extension.

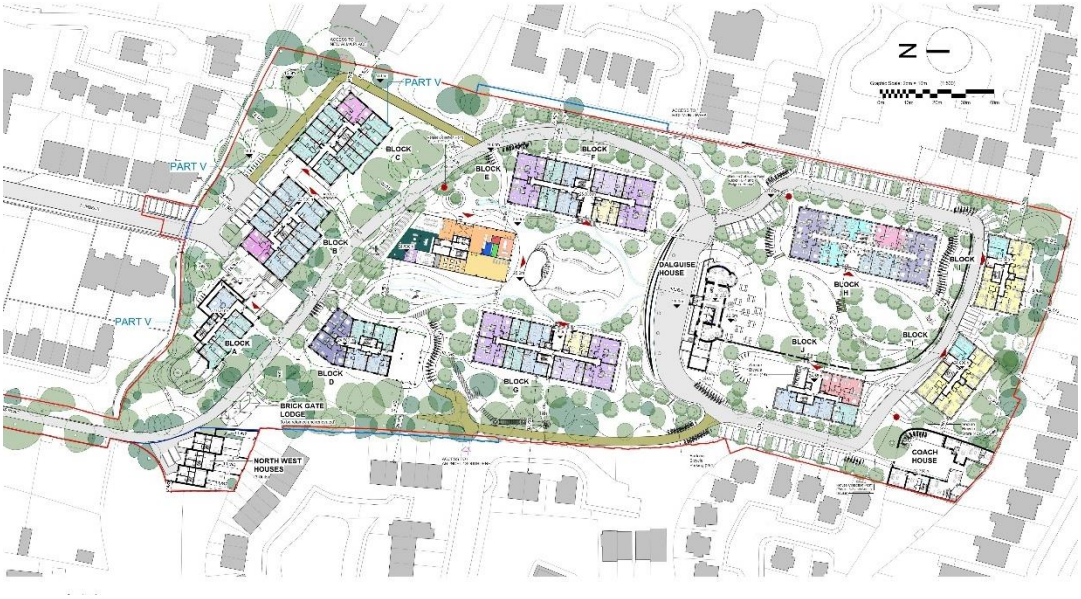

Figure 4.14 – 'Garden' Level – showing ground floor plan of each Block

Landscaping Strategy

Between the pre-S247 meeting and the current proposal, the landscape scheme has been amended to accommodate the following:

- More detailed coordination with Fire consultant allowing for emergency routes and turning circle.
- More detailed coordination with Lighting consultants and Ecologist.
- Enhancement of the route and view into the basement through Terraced Garden bridge.
- Enhanced pedestrian connection from Purbeck to the main avenue and central lawn space area.
- Arrival space around Block E with raised decking.
- Increase in number of proposed trees, including a tree that is planted at basement level, but can be seen at grade through an opening in the podium.
- Glass house removed south of Dalguise House to allow for uninterrupted views of the Walled Garden and House respectively, with outdoor seating provided south of the house and vines planted within the edible garden.
- Provision of a raised decking outdoor creche area with associated planting/boundaries.
- Provision of more bikes to meet National Apartment Guidelines requirements.
- Design of Roof Terraces on Block E.

- Changes to architectural layout / entrances / levels etc.
- Provision of more detail on hard and soft landscape materiality / SUDs and water features / Cycle provision / Open space provision / Roof terraces / Tree Strategy.

Traffic and Access Strategy

In terms of the traffic and access strategy, the following significant changes to earlier planning applications were applied by the design team to improve on the overall scheme:

- Current scheme retains principle from earlier schemes of principal access via Purbeck and secondary access via Dalguise Access. However, the Purbeck Access has been diverted into basement to avoid removal of trees if connecting to Dalguise Access.
- Dalguise Access was previously proposed one-way only. It is now proposed to facilitate light two-way traffic via passing bays along the avenue. This simplifies overall traffic management and wayfinding.
- The layout and landscaping of the roads has been brought more in line with DMURS.
- The provision for permeability connections to surrounding lands has been retained and enhanced.
- Enhanced cycle parking proposed across the site wholly in line with DLRCC and National Apartment Guidelines requirements.
- Minor modifications in response to feedback from Dún Laoghaire Rathdown County Council Transportation Department.

Overall Improvements of this proposal

This proposal responds positively to the setting and respects the positive principles established in the previous scheme. However, this design goes further to address the issues and unique context of this site creating a vibrant long term residential community. The careful arrangement of the blocks, their form, mass, and materiality all respond to the conditions found on site. Internal efficiencies found within the internal arrangement of the blocks have allowed for a reduced footprint and the scheme works closely with the landscaping design with a strong emphasis on retaining the existing setting and trees. Several overall positives can be included in the final proposal presented in this application. They include:

- **Heritage**: To retain and re-use the original historic structures found on site. Dalguise House will contain residential amenity and a food and beverage offering at Lower Ground level facing south towards the walled Garden. The Coach House and Stable Lodge will be retained and revitalised as 3 new residential apartments. The Brick Gate Lodge will be retained and re-purposed as a residential apartment. And the entrance lodge will also be retained and revitalised for use by staff.
- **Heritage**: The preservation of historic routes and linkages. The main avenue will be retained and improved with new linkages created across the scheme. The setting of Dalguise House will be improved with the new Blocks framing the view to the house as it takes primacy at the center of the scheme.

- **Architecture**: The creation of a new long-term rental residential community with top of class amenity and exceptionally designed apartments set within this mature woodland site.
- **Architecture**: The careful arrangement of the Blocks that work with the existing site conditions, vegetation, and topography to create distinct character areas. At the north of the site the split-level pavilion blocks work with the existing levels and minimise the impact on the ecology, in the centre of the site the linear arrangement of Blocks E, F, G, H minimise the footprint of the blocks and create the setting for Dalguise House, the linear arrangement and low profile of Blocks H+J frame the walled garden with the existing wall being retained and cleaned. At the south of the site Blocks J + I reduce the height and scale to the adjoining properties, taken as a whole, this scheme represents an exceptional residential scheme in a site that is tailor made for long term community residences.
- **Urban Design**: The creation of courtyards, enclosed spaces, linkages, and permeability that connects the scheme to the wider community and within.
- **Residential:** Delivery of an exceptional residential rental scheme with a mix of units designed as Build to Rent (BTR) / Build to sell (BTS), active adult and short stay accommodation.
- **Landscaping**: The creation of an innovative landscaped design within the setting of the existing parkland. Providing top class amenity spaces for the benefit of the residents and public alike.
- **Landscaping**: The creation of an innovative landscaped design within the setting of the existing parkland. Providing top class amenity spaces for the benefit of the residents and public alike.
- **Landscaping**: To retain the maximum number of trees possible whilst removing damaged / dangerous trees. Planting new / native trees to supplement and improve the setting already found on site.

Figure 4.15 – Draft CGI View of Blocks FG and Dalguise House

Figure 4.16 – Draft CGI View of Blocks J and the Rear of Dalguise House showing F+B

Figure 4.17 – Draft CGI View of the Coach House and Mews character area (Blocks i)

The proposed project constitutes the final alternative, and preferred, option. The design has been progressed via an iterative process with design amendments arising from consultation with Dún Laoghaire Rathdown County Council during the pre-application process. The current scheme takes account of both planning and environmental considerations arising throughout the design process. This planning application submission, which includes this EIAR, provides a full assessment of the proposed project from a planning and environmental perspective.

4.3.4 Alternative Process

This chapter has sought to assess the reasonable alternatives in the construction, layout and design of this project, in accordance with both the European Commission and EPA Guidelines. The development strategy surrounding the delivery of the proposal has been considered in detail and is documented in the phasing plan, drawing number MKS-RAU-ZZ-XX-DR-AR-100. Given the residential nature of the scheme, it is not envisaged that there are any alternative processes that could have been followed in respect of the assessment of environmental impact. It is therefore concluded that the consideration of an alternative process is not considered relevant to this EIAR.

5.0 DESCRIPTION OF THE PROPOSED PROJECT

5.1 Introduction

This Chapter, in accordance with Article 5(1)(a) of the EIA Directive, provides: *"…information on the site, design, size and other relevant features of the project".*

The assessment provided in the following Chapters, undertaken by the various specialists, is underpinned by the description of the project as set out below.

5.2 Background to the Site

5.2.1 Site History

In terms of the site history, Dalguise House appears on the First Edition Ordnance map of 1837, where it is named '*Richmond Cottage*'. On that map the footprint of the main body of the house appears similar to the present footprint of the main house, but the 1837 map shows a large south western extension or wing that is no longer there. The curved outline of the large walled garden appears on the 1837 map as, do the stable yard and some of the present stable buildings. On the 1837 map there is a gate lodge shown at the shared entrance to Dalguise and Carrick Brennan from Monkstown Road, but this does not have the same footprint as the present gate lodge at that location.

On the 25 inch 1907 Ordnance map the house has been renamed as Dalguise. The present three storey western extension is on the 1907 map, but the earlier southern wing at the west end of the house is gone. The footprint of the gate lodge at Monkstown Road appears to be similar to that of the present gate lodge at that location. At the south end of the lane, the 1907 map shows two further gate lodges, one each for Dalguise and Carrick Brennan, strongly suggesting that the gate lodge at the Monkstown Road end of the lane was intended to serve both houses.

One previous planning application, lodged under ABP Reg. Ref. 30694920, has been made in respect of the subject site: a Strategic Housing Development (SHD) of 300 No. units, subsequently reduced by ten in the Permission to comprise 266 No. apartment units across 8 No. blocks, ranging in height from 5 to 9 storeys, and 24 No. houses, including within the existing structures on the site (total 290 No. units). A creche was also provided under the application, as well as communal recreational facilities and 314 No. car parking spaces and 654 No. bicycle parking spaces.

In addition to the existing vehicular and pedestrian access, it was proposed to provide a further access to Monkstown Road, via Purbeck, and to facilitate additional pedestrian/cycle connects to adjoining roads to the east and west. The scheme was for 'conventional' residential units – not BTR.

That Application was granted by An Bord Pleanála, subject to 31 No. conditions. This included a condition requiring a reduction in height (by one storey) of 2 No. blocks. The condition meant the removal of 10 No. apartments, reducing the overall number of dwelling units to 290 No. The decision was subject to Judicial Review and was subsequently overturned by the High Court. According to the Judgment, the judge found that ABP had erred in their conclusion that the submitted EIA Screening Report adequately described the effects that the proposed development would have on the environment. He also found that ABP had not given adequate reasons for its EIA Screening decision that the proposed development would have an insignificant effect on cultural heritage. The judge further held that in its decision to grant permission ABP erred by relying on a Specific Planning Policy Requirement concerning building height guidelines and found that the height of the proposed development did materially contravene Dún Laoghaire-Rathdown's building height policy.

In the light of the foregoing, no extensive development has been undertaken on the land in recent years.

5.2.3 Site Location and Surrounding Area

The subject site of c. 3.58 hectares lies on an existing residential property within the built-up area of Monkstown approximately 1.5 km west of Dún Laoghaire town centre and c. 1.5 km southeast of Blackrock village. The site is within walking distance of Monkstown Village, c. 250 m, which provides a range of local services.

The site is connected to Monkstown Road to the north via an avenue of c. 80m which serves as the vehicular and pedestrian access. It is bounded to the north by modern residential dwellings at Drayton Close, Purbeck and Heathfield; to the south by rear gardens of houses at Brook Court; to the east by the rear gardens and sides of houses at Richmond Park and family hub housing; and residential developments to the west, Southdale, Arundel and The Orchard. The housing in the area is a mix of ages, with more modern infill developments to the rear of large older structures along Monkstown Road.

In terms of statutory designations, Dalguise House is the only Protected Structure (RPS No. 870) on the site according to the *Dún Laoghaire- Rathdown County Development Plan 2022-2028*.

The site is located within 500m (5 minutes' walk) from the Salthill and Monkstown Dart Station. This station provides service for Dart suburban rail service direct to Connolly Station, where it connects to the national rail network. There are also a number of bus stops within 200 metres of the site, served by routes 7 and 7A, which connect the site to Mountjoy Square to the north to Brides Glen Luas/Loughlinstown. A further bus stop at Temple Hill (c. 800 m to the west) is served by routes 4; 46E; 84; 84A.

The proposed development will be fully accessible for pedestrians, cyclists, and the mobility impaired and disabled. All the surrounding main roads have adequate width footpaths on both sides and crossing facilities at junctions. Along the R119 Monkstown Road footpath width on the south side is approximately 1.8m and between 2-2.5m on the northern side. In terms of cyclist accessibility, cycle facilities are present along the R119 Monkstown Road. These connect to express routes to the city centre along both the Blackrock Road and Coast Road

corridors. These major routes are subject to ongoing improvement as part of the implementation of the GDA Cycle Network Plan and the BusConnects programme.

The site is served by an existing schools' network of 16 No. primary schools (incl. 7 No Special education schools) and 8 No. post-primary schools, as well as 31 No. existing childcare facilities within c. 2km of the proposed development. A total of 31 No. operational childcare facilities were identified within a c. 2km radius of the subject site (equivalent to a c. 15-minutes' drive time).
Other adult education and training facilities such as the Lumen Dominican Centre, Dún Laoghaire Community Training Centre, Tivoli Training Centre, and Blackrock Education Centre are also available to local residents. Additionally, there are also third level institutions such as the National Film School, UCD Michael Smurfit Graduate Business School and the Dun Laoghaire Institute of Art, Design, and Technology which are located within 1-2km from the subject lands.

The subject site is supported by a number of local community facilities, including the Urban Junction, Central Dun Laoghaire Senior Citizens, The Beat Youth Café, Blackrock Community Men's Shed, Kill o' the Grange Parish Hall, Boylan Community Centre, Foxrock Parish Pastoral Centre, Holy Family Parish Resource Centre, Mountown Community Facility. The Blackrock Library and the DLR Lexicon are located just over 1km from the subject site.

Extensive open space and recreational grounds are located in the area, including several parks such as Dunedin Park, Vesey Gardens, Temple Park, De Vesci Gardens, Soldiers and Sailors Park, Longford Park, Belgrave Square, and Apna Park (Picnic site) along with the Soldiers and Sailors playground which are located under 1km from the subject lands.
There are also a number of sports facilities such as the Monkstown Pool & Fitness Centre, Blackrock College RFC, Newpark School Sports Centre, Newpark Swimming Pool, Harbour Splash and the Monkstown Swimming Pool in close proximity the subject lands.

The study area is located within c.2km from a number or larger retail centres such as Dún Laoghaire Shopping Centre, Bloomfields Shopping Centre, Frascati Shopping Centre, Blackrock Village Centre, and the Park Pointe Retail Centre along with a few marketplaces such as the Blackrock Market, the People's Park Sunday Market and the Blackrock Food Market.

There are also a number of supermarkets and greengrocers in close proximity including, Tesco, SuperValu, ALDI, Lidl, Avoca Food Market, Dunnes Stores, and T. Murphy along with a number of local convenience shops.

5.2.4 Site Specific Flood Risk Assessment (SSFRA)

As stated in Section 10.3.2 and Section 10.4.2.2 of Chapter 10 (Hydrology), a Stage 3 Flood Risk Assessment was carried out by McCloy Consulting in 2021 for the proposed development site. This flood risk assessment has been carried out in accordance with the OPW publication *"The Planning System and Flood Risk Assessment Guidelines for Planning Authorities".*

The analysis shows that the majority of the site will not be affected by a 1 in 100 or 1% AEP (Annual Exceedance Probability) year storm event or a 1 in 1000 or 0.1% AEP year storm event and as such is located in Flood Zone C. Small areas to the north of the site lie within the 0.1%

AEP floodplain of the Stradbrook Stream (Flood Zone B) and the 1% AEP floodplain (Flood Zone A) as defined in the Flood Risk Management Guidelines. This has been confirmed with the most recent OPW flooding maps (available on www.floodinfo.ie). The development design has taken this into account and the 'sequential approach' has been applied to the existing flood scenario at the site as follows (McCloy Consulting, 2021):

- Highly vulnerable development (residential) has been wholly located in Flood Zone C / outside the 0.1% AEP floodplain (with the exception of 6 m^2 of Block B). It is noted that Block B lies entirely outside the post-development 0.1% AEP floodplain.
- Less vulnerable development (access roads) has been located in Flood Zone C with the exception of the section crossing the watercourse to accommodate site access. It is noted that proposed levels of the watercourse crossing will ensure it lies outside / above the 0.1% AEP flood level.
- Less vulnerable development (car parking) has been site in Flood Zone C as much as possible but sections in the north of the site are by necessity located in Flood Zone A / 1% AEP and Flood Zone B / 0.1% AEP. Finished levels in those areas are subsequently raised relative to adjacent flood levels and have a post-development probability of flooding equivalent to Flood Zone C.
- Open green space (non-amenity) areas are sited within Flood Zone A but are considered appropriate as such under the OPW guidelines.

Furthermore, the site-specific hydraulic modelling has shown that the proposed development will not have any off-site effect / increase in flood risk elsewhere.

5.2.5 Existing Site Access

The site is currently accessed via the vehicular entrance to Dalguise House off the R119 Monkstown Road. The site is currently served by a single access point only.

5.3 The Need for the Proposed Project

The proposed project, a large-scale residential development, is supported by planning policy at all tiers. The project delivers a significant number of new homes as required to meet housing objectives outlined throughout the relevant policy documents. The relevant national, regional and local planning policy is outlined in in Chapter 3 (Planning and Development Context) and further in the supporting planning documentation.

The Applicant GEDV Monkstown Owner Limited will operate the proposed scheme as part of the Greystar group. Greystar is the global leader in rental housing; it provides a full suite of services from design, development and operation of high-quality residential assets worldwide, with developments in Europe, North and South America, Asia and Australia. With over 750,000 units managed globally, Greystar has been delivering residential rental opportunities for over 30 years and has been operating in Ireland since 2019.

Greystar currently operates two schemes in Ireland:

- Griffith Wood, Dublin 9 (342 No. units) operational since December 2021; and

- Dublin Landings, North Wall Quay (268 No. units) operational since December 2019.

Dalguise will be the first scheme in Ireland that Greystar have brought from design to operation. The scheme will reflect Greystar's long-term experience as a world class operator and will deliver the quality of residential units and associated amenities that residents of Greystar's schemes expect within an accessible, high-quality environment all of which result in an exceptional living experience.

Greystar are long term operators and holders of residential communities. This is a very different approach to other developers in the market whose investment ethos is to sell on completion. Greystar is highly motivated by the long-term success of the scheme as a high quality, well integrated residential community that is directly managed by a team of on site, directly hired personnel.

Greystar's central management system is critical to its success. Each development has dedicated on-site staff, who provide a 24-hour service. This ensures that any repairs or operational difficulties can be addressed promptly. Management staff are familiar with the specific development and residents, which also improves residents' experiences and supports Greystar's high-quality services. The on-site management also ensures that car, motorcycle and cycle parking can be managed effectively, and that mobility measures set out in a Travel Plan can be implemented successfully.

The provision of publicly accessible services such as the Restaurant, Childcare Facility and public open space accords with Greystar's goals to integrate their developments with the local community and area.

The Applicants for this scheme are market leaders in the delivery and operation of Build-to-Rent (BTR) developments and they consider this development will be their flagship development in Ireland and that it will set the standard for BTR developments in the country.

Furthermore, the Applicant (GEDV Monkstown Owner Limited) is making a significant positive contribution towards enabling an affordable housing sector in Ireland. As part of the proposed development, the applicant is providing 20% of units for social and affordable homes in accordance with the Affordable Housing Act 2021.

5.4 Overview of Construction Phase and Construction Works

For full construction related details, refer to the *Construction Environmental Management Plan* (CEMP) prepared by ByrneLooby and Roughan & O'Donovan Consulting Engineers. A summary is provided below.

5.4.1 Construction Phase

The construction of the project is planned to take between 36 to 42 months. The current phasing suggests that the project will be split into three phases, with the accompanying infrastructure and green spaces being constructed with each phase. Please refer to Figure 5.1 of the CEMP for proposed indicative construction phasing details.

The substructure works in Phase 2 will commence once the excavations of the basement within Phase 1 have advanced. The proposed bridge at Purbeck shall be constructed during Phase 1. The refurbishment works to Dalguise House and the Coach House buildings will be in Phase 1, with the works in parallel by a specialist contractor with suitable experience working on Protected / Historic structures. The installation of buried services and landscaping works shall be coordinated with the building substructure works, and the programming of the works shall be scheduled depending on the dismantling of scaffolds to buildings, the suitable planting period etc.

The final phasing and associated Construction Traffic Management Plans shall be submitted by the appointed Contractor to Dún Laoghaire Rathdown County Council for approval prior to commencement.

Figure 5.1: Illustrative Plan showing proposed construction phasing.

5.4.2 Proposed Construction Works

The proposed development will be divided into a number of phases as set out in the preceding section. Works in each phase will consist of the following:

Phase 1:

Phase 1 will incorporate the construction of the basement. As noted in the site investigation, bedrock should not be encountered during excavations. The majority of the excavations can utilise battered excavations, but some vertical temporary retaining walls will be required along the northern and western boundaries in close proximity to existing trees to be retained. The temporary retaining walls will include bored piles. All excavation banks shall be protected and inspected regularly. The foundations in the basement area will be integral to the basement slab. Some anti-flotation anchors may be necessary at basement level, below podium areas, and this will be subject to further monitoring of the groundwater levels over

the coming period. The superstructure will then be constructed from the podium level, as outlined in the following sections.

Access to this phase will be via the existing roadways, with a cellweb build-up provided on roadways that overlay with the tree Root Protection Zone (RPZ). The bridge crossing at the Stradbrook Stream will also be constructed in this initial phase.

Phase 2:

The excavations at Phase 2 will overlap with the completion of excavations at Phase 1. As noted in the site investigation, bedrock should not be encountered during excavations, and the bulk dig in Phase 1 shall be achieved using battered slopes to a safe angle of repose. All excavation banks shall be protected and inspected regularly. Excavations near trees to be retained shall incorporate specific construction techniques as outlined by the Arborist.

The foundations in Phase 2 shall consist of shallow reinforced concrete strips or pad foundations. The superstructure will then be constructed from the foundation, as outlined in the following sections. Access to this phase will be via the existing roadways. An existing septic tank serving Dalguise House will be removed at the footprint of Block J. The site investigations to date do not indicate any contamination in the area, however, a Remediation Plan as set out in the Engineering Services Report shall be implemented for the removal of the tank and backfill.

Phase 3:

Phase 3 will include the construction of the final blocks. As with Phase 1, some of the excavations are adjacent to existing trees to be retained, and as a result, a temporary retaining wall shall be employed along the southern boundary of Block A, B and C. The foundations in the basement area will be integral with the basement slab. Some anti-flotation anchors may be necessary at the undercroft level, below podium areas, and this will be subject to further monitoring of the groundwater levels over the coming period. The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase shall be via a new temporary roadway constructed with a CellWeb buildup over RPZs. Finally, any temporary piling platforms will be agreed in advance with the Arborist.

5.4.3 Construction Working Hours

Unless required otherwise by Dún Laoghaire-Rathdown County Council, it is proposed that standard construction working hours should apply, i.e.: 7am to 7pm Monday to Saturday. No works shall take place on site on Sundays or Bank Holidays.

If there is any occasion where work may be carried out outside normal daytime working hours, Dún Laoghaire-Rathdown County City Council, local residents and businesses in the area which are likely to be affected by the proposed works will be notified in advance.

The Project Supervisor Construction Stage (PSCS) will liaise with the Client to agree specific arrangements for activities outside of normal working hours that will minimise the risk and disruption to residents and members of the public. All reasonable precautions will be taken

for the operation of plant and equipment to avoid nuisance and excess noise impact on the surrounding residents.

5.4.4 Construction Traffic

The works associated with the new development will result in additional traffic on the neighbouring road network, with vehicle movements associated with the removal of excavated material, demolition waste, construction waste, and the delivery of new materials, concrete trucks etc.

The primary access routes to the site shall be determined by the Contractor in their Construction Traffic Management Plan (CTMP). Primary vehicle movements shall be limited to access/egress via the existing access to the Dalguise House lands off Monkstown Road. The Contractor will identify primary access routes that provide the most direct access to the M50 and limit access along local roads. Based on the quantities of excavation and fill to be moved to or from the site, construction waste removal, and general site deliveries for the intended construction works, HGV traffic is estimated to be a maximum of 10 movements per hour. The figures below identify two routes to/from the site to the M50.

- Route 1 (Accessing the site, same return trip): Via the M50 onto the N31 at Leopardstown, left onto the N11 (Stillorgan Road), right onto N31 (Mount Merrion Avenue), right onto Frascati Road, left on to R119 (Monkstown Road).

Figure 5.2: Construction Route 1 (Source EPA Maps).

- Route 2 (Accessing the site, same return trip): Via M11/M50 to the south, onto the N11 (Bray Road) through Cherrywood / Cornelscourt onto the Stillorgan Road, right onto N31 (Mount Merrion Avenue), right on to Frascati Road, left on to R119 (Monkstown Road).

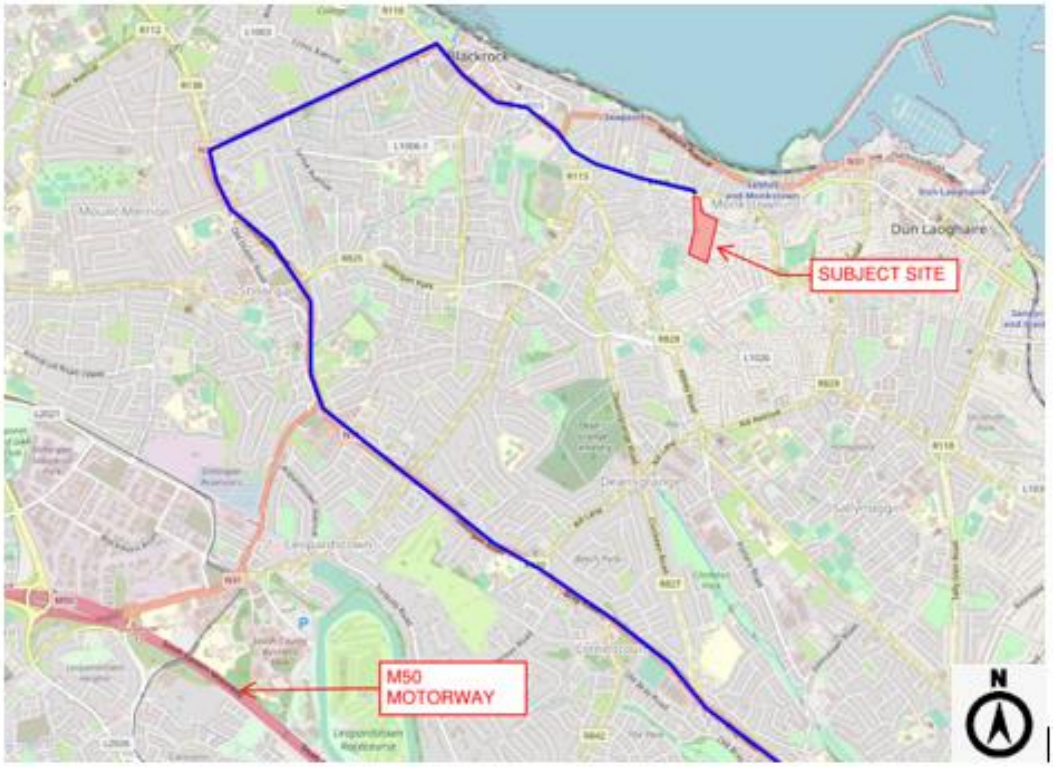

Figure 5.3: Construction Route 2 (Source EPA Maps)

The following are some measures that will be implemented to accommodate smooth traffic flows:

- Entrance will be wide enough to ensure two rigid-body vehicles can pass each other. Where this is not possible, suitable laybys with a temporary one-lane traffic light system shall be provided, with priority to vehicles entering the site.
- Site entrance gate will be set back a minimum of 18m from the footpath edge to ensure all vehicles leave the road before stopping.
- Appropriate sight lines will be provided;
- Advanced warning provided to all users on the road and directional signage for site traffic.

Detailed measures shall be developed further as part of the CTMP developed by the Contractor in consultation with the Design Team and Dún Laoghaire Rathdown County Council prior to commencement of works.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both the public (off-site) and internal (on-site) worker's environments, are fully considered and proactively

managed/programmed respecting key stakeholders requirements thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment. It is noted that the impact of the construction works will be temporary in nature.

The CTMP shall be prepared in accordance with the principles outlined below and shall always comply with the requirements of:

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the Local Government Management Services Board; and
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS).
- In order to ensure satisfactory operation of the construction stage the following is proposed:
- Provision of sufficient on-site parking and compounding to ensure no potential overflow onto the local network.

Site offices and compound shall be located within the green space area just south of Dalguise House. The site will be able to accommodate employee and visitor parking throughout the construction period with construction of temporary hardstanding areas.

Finally, truck wheel washes will be installed and any specific recommendations regarding construction traffic management made by the Local Authority will be adhered to. The following mitigation measures shall be incorporated into the CTMP:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- The surrounding road network will be signed to define the access and egress routes for the development.
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- All employees' and visitors' vehicle parking demands will be accommodated on-site.
- A programme of street cleaning if/when required.
- Any associated directional signage
- Any proposals to facilitate the delivery of abnormal loads to the site
- Measures to obviate queuing of construction traffic on the adjoining road network.

5.4.5 Health and Safety

The site will be made secure during each phase by implementing the following measures:

- Operate a site induction process for all site staff.
- Ensure all site staff shall have current 'safe pass' cards.
- Install adequate site hoarding to the site boundary.
- Maintain site security staff at all times.
- Pedestrians will have right of way. If required, alternate pedestrian routes around the site will be created and clearly signed.
- Ensure restricted access is maintained to the works.

5.4.6 Construction Waste

Construction waste arising from the proposed development will be handled in line with the *Resource & Waste Management Plan for A Residential Development* prepared by AWN and enclosed as Appendix 18.1 of this EIAR.

5.5 Description of the Operational Phase of the Proposed Project

In summary, the proposed development is a Large Scale Residential Development comprising 3 No. two storey 3-bed terraced houses (GFA 569 sq m), and 488 No. Build-to-Rent units (consisting of 2 No. studio units; 288 No. 1-beds; 32 No. 2-beds/3 persons; 153 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The table below provides the key development statistics.

Development Statistic	Proposed Development
Site Area	3.58 ha
No. of Residential Units	491 (488 no. apartments and 3 no. houses)
Density	137 units per hectare
Height	3 – 9 storeys
Dual Aspect	53%
Balconies	63%
Plot Ratio	1.31
Site Coverage	22%
Car and Cycle Parking	224 no. spaces (20 no. undercroft car parking spaces, 148 no. basement car parking spaces, 42 no. surface car parking spaces, 8 no. car spaces for food & Beverage, 6 no. Creche car parking spaces) 1, 071 no. Bicycle Spaces

5.5.1 Demolition

The demolition and part-demolition of existing structures (total demolition area 967 sq m), including:

- White Lodge a 2 storey house (192 sq m);
- Swimming pool extension to the southeast of Dalguise House (250 sq m);
- Residential garage and shed to the southwest of Dalguise House (285 sq m);
- Lean-to structures to the south of the walled garden (142 sq m);
- Part-demolition of Lower Ground Floor at Dalguise House (9 sq m);
- Demolition of single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard;
- Demolition of potting shed (13 sq m);
- Removal of 2 no. glasshouses; and
- Alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east.

5.5.2 Residential Development

The development with a total gross floor area of approximately 46,940 sq m (including a basement of 5,230 sq m and undercroft parking 1,344 sq m; and 45,712 sq m of new build, excluding the retained existing buildings of 1,228 sq m), will consist 491 No. residential units, comprising:

- 3 No. two storey 3-bed terraced houses;
- 488 No. Build-to-Rent units, residential amenities and residential support facilities;
- A childcare facility; and restaurant/café.

The proposed housing mix is as follows:

	Apartments	Houses	Total	
Studio	2		**2 (0.4%)**	
1 bed	288		**288 (58.6%)**	
2 bed	78		**78 (15.8%)**	
2 bed (3 person)	27		**27 (5.4%)**	
2 bed (4 person)	80		**80 (16.3%)**	
3 bed	13	3	**2.6 (%)**	**3 (0.6%)**
	488	**3**	**491**	

The proposed residential units will be arranged as follows:

Northwest Houses

The proposed development includes 3 No. 3-bed terraced houses located at the north west of the site at the main Dalguise House entrance. The 3 no. houses are two-storey in height and have a total gross floor area of 569 sq m.

Block A

Block A is located at the Purbeck entrance to the south of the site and is 7 storeys in height. The building has a gross floor area of 2, 015 sq m and comprises a creche, which is 540 sq m over Ground and First Floor Levels; and 19 no. apartment units, including 15 No. 1-beds and 4 No. 2-beds.

Block B & Block C

Block B & Block C are located to the south of the site at the main vehicular entrance and are 7 storeys over undercroft parking. Each building has a gross floor area of 3,695 sq m and comprises 48 no. apartments units (total 96 no. apartment units) including, 33 No. 1-beds, 6 No. 2-beds/3 persons, and 9 No. 2-beds/4-persons in each block.

Block D

Block D is located at the access to the site to the east and is 7 storeys over basement level car park. The building has a gross floor area of 4,150 sq m and 50 no. apartment units, including 24 No. 1-beds, 26 No. 2-beds.

Block E

Block E is located in the centre of the southern part of the site and is 9 storeys over a basement level car park. The building has a gross floor area of 5,904 sq m comprising:

- 66 No. apartment units including 40 No. 1-beds, 26 No. 2-beds;
- Residents' support facilities including a concierge/lobby (75 sq m);
- Residents' amenities (gym, yoga studio, residents' lounge/co-working space; lobby 494 sq m) at Ground Floor Level; and
- Residents' amenities (residents' lounge; games room; screen room; private lounge; kitchen 333 sq m) with roof terrace (106 sq m) at Eighth Floor Level.

Block F and G

Block F and G are the central blocks flanking the main lawn area creating a formal setting to Dalguise House. Each building is 7 storeys over basement level car park and has a gross floor area of 5,469 sq m. Each building contains 76 No. apartment units including 46 No. 1-beds, 5 No. 2-beds/3 persons, 23 No. 2-beds/4-persons, 2 No. 3-beds.

Block H

Block H is located at the southern end of the site and forms a courtyard with the walled garden. The building is 5 storeys over lower ground and has a gross floor area of 4,252 sq m. The building contains 54 No. apartment units including 30 No. 1-beds, 22 No. 2-beds and 2 No. 3-beds.

Block I (1 & 2)

Block I (1 & 2) are mews style apartment buildings located at the southern end of the site behind the Garden Wall. Each building is 3 storeys with a gross floor area of 1,038 sq m. Each building comprises 12 No. apartment units including 3 No. 1-beds, 2 No. 2-beds/3 persons, 7 No. 2-beds/4-persons.

Block J

Block J is a mews style apartment building located at the southern end of the site to the west of the Garden Wall. The building is 4 storeys in height and has a gross floor area of 1,844 sq m. It comprises of 20 No. apartment units including 13 No. 1-beds and 7 No. 3-beds.

Dalguise House and other Historic Buildings

The development includes the refurbishment, adaptation and reuse of the two storey Dalguise Lodge (Entrance Lodge) (GFA 55 sq m) comprising residential support facilities; a single storey Gate Lodge (GFA 55 sq m) comprising 1 No. 1-bed unit; and two storey Coach House and single storey Stableman's House (GFA 319 sq m) to provide 3 No. apartment units (1 No. 1-bed, 2 No. 2-bed/4 persons).

The refurbishment, adaptation and change of use of Dalguise House (GFA 799 sq m) from a single residential dwelling to provide: 3 No. apartment units (2 No. studios and 1 No. 2-bed/3 person) at First Floor Level; a restaurant/cafe at Lower Ground Floor Level (GFA 273 sq m); and residents' amenities at Ground Floor Level (library, residents' lounge, events space, bar/bookable room, 157 sq m).

Works to the existing structures include: removal of existing internal partitions and doors, alterations to internal layout including provision of new partitions and doors to Dalguise Lodge (Entrance Lodge); the removal of the western chimney and chimney breast, removal of existing internal partitions and doors, and alterations to internal layout including provision of new partitions and doors to Gate Lodge (Brick Lodge); replacement of existing roof, windows and doors, non-original mezzanine floor and stairs of Coach House, creation of new internal and external opes, reconstruction of chimney, construction of new stairs, provision of new internal partitions and doors, replacement of the demolished single storey structure to south of Coach House with a 42 sq m single storey extension, including construction of a link between Coach House and Stableman's House; replacement of existing roofs, windows, doors, creation of new external opes and provision of new internal partitions and doors to Stableman's House; restoration of Coach House yard walls; removal of security bars from windows, internal partitions, doors, two secondary staircases, non-original fireplaces; and the reconfiguration of internal layout including introduction of new partitions, doors and fireplaces, in-fill of former secondary staircases; removal of an existing window at rear facade

of Lower Ground Level, alterations to ope and replacement with a new external door; reinstatement of external wall fabric in place of demolished lean-to at the rear facade; and removal of external door to swimming pool on eastern facade and closure of ope at Dalguise House).

5.5.3 Non-Residential Development

The proposed development will deliver non-residential provision which includes the proposed café /restaurant (273 sq m) located at the Lower Ground Floor of Dalguise House at the center of the site, and the creche (540 sq m), located at the ground and first floor of Block A at the Purbeck entrance to the site.

The proposed non-residential uses will serve both the residents of the proposed development and be accessible to the existing community.

5.5.4 Landscape Strategy and Design

The proposed landscape strategy has been developed by the landscape architects in close collaboration with other disciplines in the design team. Focus was placed on retaining the existing trees on site where possible with minimal re-grading in root protection areas. Therefore, this has impacted the distribution of the communal open space and public open space.

The general landscape design objectives are to:

- Establish a high-quality parkland space that is in keeping with the historical era of Dalguise House.
- Retention and enhancement of existing historical features such as the tree lined avenue approach to Dalguise House, the house lodges, stable buildings and the walled garden.
- Retention of high-quality mature trees, and increased tree planting
- Maximise views towards the protected coastline and views towards the historical Dalguise House
- Create a predominantly public landscape with open space for locals and visitors to enjoy with greater permeability and accessibility to the wider townscape.
- Facilitate pedestrian/cycle links with the wider neighbourhood.
- Introduce environmental elements that residents and visitors can interact with and learn from.
- Increase biodiversity and management of the site.
- Introduce SUDS in a way that benefits amenity
- Minimal intervention is being sought with manicured areas only where it would be in keeping from a historical perspective.

Proposed Tree Planting Species

There are a large range of trees on site including native, ornamental varieties and complimentary species. There is also a range of tree ages and condition with the majority of trees being mature and of fair condition as per the submitted Tree Survey prepared by Leinster Tree Services.

The scheme proposes to use many of the same species as the existing trees with some additional complimentary species to increase biodiversity and sustainability of tree cover. Tree species were selected based on suitability to local soil conditions and microclimate, longevity and biodiversity.

Proposed trees have been categorised into different types for different positions/areas within the landscape masterplan. These include:

- Large parkland trees
- Native/naturalistic trees
- Ornamental trees
- Swale trees
- Edible trees
- Main avenue trees

Trees planted will be a combination of Mature and Semi-Mature species. Clear Stem Trees will be specified to have a range of sizes: 60-70 Girth for the Large Parkland Trees, 40-45 Girth 30-35 Girth for other categories. These will have a minimum of 2m clear stem.

Multi Stem Trees will be specified to be at least 4-5m high with canopy lifted by at least 1m. Espaliers will be 3-4m high.

Where possible trees will be planted in tree pits as part of the SUDs strategy and to increase the health of the trees. This will not be possible where there are root protection zones. Trees within the podium will either be planted in raised landscape mounds or within raised planters to ensure they receive enough build up for healthy, sustainable growth.

Proposed Overall Planting Species

The soft landscape strategy proposes seeding the majority of grass areas with a long meadow mixture with the exception of the central lawn area and grass within 1m of paths/roads, which will have a shorter flowering lawn mixture. Grass mixtures along swales and pond edges will consist of a suitable wetland species. Woodland floors will remain as is, apart from where there is too much disruption to the understorey. In these areas a woodland meadow mix will be seeded.

Along the main avenue there will be some bulb planting punctuating the route in areas and bulb planting will also be used selectively in the main garden areas and central lawn.

Along the periphery of the site native shrub planting and hedges will be introduced in areas that are free from root protection zones.

Edible plants (all edible forest layers) will be specified within the walled garden and climbers will be planted at the base of the walled garden wall and entrance archways to achieve a secret garden character.
Ornamental planting is proposed directly around the blocks, in some areas this will be low level planting to account for lower build ups and a no dig planting method within root protection zones. In other areas this will also include taller species to allow for more structural interest. Marginal (both dry and wet), emergents and submerged aquatics will be proposed around the pond area, whereas dry swale species will be used along the slopes of the dry swales. A mix of sedum and biodiverse roof planting will be planted within the green/blue roofs and sedum boxes will also be provided on the tops of bicycle sheds.

Specifications of healthy, full specimens at a density that allows for instant impact will ensure that the site feels like a mature landscape from the start. Species are selected based on their suitability of particular positions – dry swales / shade etc. in addition to their aesthetics and ecological criteria.

Refer to the Landscape Soft works drawings (C0135 L300 series) submitted for the planning application by Cameo+Partners.

Hard Landscaping

The hard landscape elements have been carefully selected to for their proposed function and durability, and their ability to enhance the space and honour its historical parkland character. In parts of the site where there are lots of existing trees and therefore root protection zones, paving that can be laid using a no dig construction method has been favoured. Sustainability has also been a key consideration with a desire to use as much of the high-quality materials on site as possible. Materials that will benefit the SUDs strategy have also been proposed where possible, such as permeable resin bound paving, permeable concrete blocks, gravel suds pavers and reinforced grass.

The main avenue will be resurfaced with a buff macadam over the existing tarmac, this will repair the surface and create a shared surface aesthetic that is fitting for its parkland setting, but also durable and fit for purpose. As it will be laid on top of the existing tarmac it will have less impact on root protection zones. Main paths closer to the residences will be permeable resin bound gravel, and woodland paths will be laid with loose bark chip and timber edging using a no dig construction to protect tree roots. Where raised decking, bridges and elevated walkways are necessary composite timber decking will be used to ensure longevity. With timber being used for structures within the woodland – such as the yoga platform, elevated bird hide and elevated tree walk.

The existing granite cobbles from the path that leads up to Dalguise House will be retained and used around the main house. These will be supplemented with new granite cobbles, (chosen to match existing), and used around the Coach House. Private terraces will be laid with granite flags. The two other feature paving areas, such as the area around the outdoor pavilion within the central lawn and the terraced gardens will consist of large high quality, polished concrete slabs with gravel joints. These materials should complement and further enhance the existing hard materials and natural surroundings.

Reinforced grass system will be used for the Fire emergency route that runs up the northern slopes in addition to various road widening passing bays along the main avenue to help retain the parkland character of the site at these points.

Play Strategy

The play strategy proposes three different types of play experience within the site:

- Play off the ground (160 sq m) - Play which is mainly elevated off the ground to ensure minimal disruption to root protection areas and a different level of interaction with the existing trees and canopy. This includes the tree top walk and elevated play nets.
- Natural looking & sculptural play (903 sq m) - Play made out of timber and stone which feels in keeping with its natural environment. This includes Stepping Stumps, Existing Fallen Logs, Timber Climbing Ramp, Logs, Play Boulders, Jumping Discs, Timber Stilted Balance Beam.
- Naturally occurring play (1344 sq m) - Play encouraged by landscape features - such as depressions and mounds, slopes, dry swales, woodland, wildflowers.

This amounts to 2,407 sq m of playable landscape across the masterplan, some of which is within the public open space and other areas that fall within the communal space. The play areas are spread across the site, with most of the areas provide a variety of equipment that appeals to different ages - 0-5yrs, 5-11yrs, and 11yr plus. The exception to this is the smaller play areas to the north that only contain equipment for 0-11yrs. The elevated tree walk will not be restricted to certain ages, but adult supervision will be necessary for under 5yrs.

The proposed play equipment will be designed and manufactured in accordance with standards EN 1176 and EN 1177. There will be a mix of impact absorbing play surfaces including loose bark mulch in areas of root protection zones and bonded rubber mulch that looks like bark mulch within the gardens where root zones are not impacted. Within the walled garden a high quality artificial grass will be used as the play safety surface to ensure that it is fitting with the Walled garden character.

A list of all play equipment can be found within the landscape package prepared by Cameo+Partners and included in this planning application.

Environment Strategy

As per Criterion 4, in accordance with the requirements of DLRCC all new developments are to incorporate the principles of 'SuDs'. The aim of 'SuDs' inclusion across the development is to provide an effective system separate from the foul network to mitigate the adverse effects of storm water run-off on the environment, through enhanced quality systems and on local infrastructure to aid in preventing downstream flooding. The features proposed shall reduce runoff volumes, pollution concentrations and enhance groundwater recharge and biodiversity.

The proposed development 'SuDs' features shall consist of:

a) **Green/Blue-roof** – The proposed system is a ACO Roofbloxx Blue roof system, this allows the roof areas of the proposed apartments to use a filter layer to direct rainfall events into a storage layer below. An 85mm space will be provided for rainfall to be

retained in the storage layer. As more intense rain falls on the blue roof can overflow from the roof through down pipes and into the schemes main drainage runs. The storage area will be covered with a sedum topsoil to increase the water retention on each roof.

b) **Permeable Paving** – This system allows rainwater to be directed into carparking bays whereby the rainwater can filter through gaps in the paving blocks and percolate into the subsoil or to swales. The area which can be drained is subject to the infiltration characteristics of the subsoil, (Reference Ground Investigation Report Appendix 9.2) which is established following ground investigation testing on site.
c) **Tree Pits** – Tree pits will be located along the existing avenue to capture runoff for the existing hard standing area. It is proposed that the tree pits will be connected and act like an attenuation basin where the water can then be released slowly into the storm network.
d) **Swales and pond** – It's proposed to allow storm water to be directed locally into swales when the permeable paving is overflowing to delay storm water from entering the main drainage network. As the swales overall can only accommodate relatively small surface areas across this site, the proposal cannot be used to drain the site as a whole, but will be installed to contribute to the overall 'SuDs' strategy.
e) **Filter Strip** – An area of the existing road will have a filter strip located to the North to capture rod runoff for small rain fall events. This allows run-off from localised hardstanding areas to be filtered and trap silt prior to entering the storm network.
f) **Attenuation Tanks** – As noted above, for extreme storm events, a dedicated system to contain the storm water flows generated during a 1-in-100-year storm, increased by 20% for climate change are required by DLRCC. It is proposed to use underground storage tanks in three locations for this purpose see Drg. No. W3683-DR-1018 prepared by ByrneLooby Consulting Engineers.
g) **Low Water Usage Appliances** – It is also worth highlighting that low water usage appliances should also be utilised to aid in the reduction of water usage on the development.

With the above SUDs provisions, it meant that oil separators are not required prior to final disposal of storm water from the development drainage network into the Stradbrook Stream (at two locations).

The combination of the above noted elements will allow the proposed development to adhere to the principles of sustainable drainage practices while enhancing overall storm water quality.

5.5.5 Public Open Space

This landscape consists of a sequence of different open spaces that are open to the public. Not all of these are accessible for all - due to the steep topography of the existing site and the desire to retain as many high value trees as possible and therefore undertake minimal regrading within root protection zones.

However, the landscape masterplan does provide 6,350 sq m of public open space that is accessible and usable by all, well over and above the 15% requirement of 5,370 sq m. This includes the following areas:

- The central lawn; this area comprises of a formal lawn with meadow planting and mounds to the sides, circuitous paths edged with rills and planting beyond. It includes

an outdoor pavilion with indoor and external seating opportunities and other opportunities for seating within the lawn, with great views towards Dalguise House, framed by the trees. There is no play equipment in this area, but the landscape mounds and meadow and rills will provide a playable landscape.

- The garden between Blocks E & F; this area includes a raised timber deck to the north of Block E with tables and chairs and a more enclosed garden and play area which is characterised in part by the existing mature tree at its centre and also by the provision of another mature tree (Scotts Pine) rising up from a hole in the podium/basement floor.
- The woodland area west and north of Block G; this area comprises of several play nodes at ground, the elevated walkway and elevated play nets and the surrounding woodland landscape.
- The Walled Garden; this area includes the terrace directly to the south of Dalguise House which has provision for outdoor eating and drinking with views of the house to the north and the restored wall garden to the south. It also includes the regenerated walled garden. The Walled Garden will be split into a more active area with play to the north and a quiet, reflective space to the south, where people can grow and pick edible plants and rest in this sheltered spot. Plant beds will contain mainly edible plants and trees, including herbs, fruits, nuts and vegetables, but also plants of botanical interest. An edible forest approach will be used with the trees planted in an orchard style. The walled garden wall will be retained and lengthened while access into the walled garden will be at points where there is already a break in the wall. The two existing trees of value will be retained within the design. There will be interesting structures within the garden - such as a long pergola trained with fruit trees. Along the paths there will be benches for rest and relaxation. Within the planting there will be areas for beehives, insect hotels and bird tables. Growing information boards will be positioned in key areas to educate people about the edible forest approach

5.5.6 Communal Open Space

The proposals allow for 3,880 sqm of communal open space (above the required 3,869 sqm based upon the communal open space for the apartments and the additional communal open space to compensate for units without, or with a shortfall in private open space). This includes the following:

- The garden area between Blocks D & E; which consists of a play area with water play, seating provision, and associated planting including a raised planter.
- The communal roof terrace on Block E, which includes outdoor dining and seating provision enclosed within raised planters with views of the coastline to the north and a viewing deck.
- The courtyard by the Coach House
- Woodland areas to the north and south of the site that include resting and play opportunities and sculpture interspersed within the woodland environment.
- In most places informal boundaries exist between public open space.

5.5.7 Access

The site is currently accessed via a driveway from the R119 Monkstown Road. This access point leads to the historical winding avenue that leads up to Dalguise House. The road is currently narrow and not conforming to standards for a two-way route. Increasing the width of this road for two-way traffic would have a detrimental effect on the existing trees. Therefore, another access route through the adjoining Purbeck development is proposed. This new access route will be the main vehicular access and lead directly into the basement of the development where there will be underground parking. This was heavily influenced by the desire to retain as many high value trees as possible in this part of the site.

The existing winding avenue that leads up to Dalguise House will be repaired and resurfaced with Buff macadam, but this will be done on top of the existing surface, so further excavation will not be necessary. In most areas the width of the original road will be retained with distinct incidences of road widening for passing bays. However, these passing bay areas have been carefully chosen so as not to encroach on existing root protection zones. The road will act as a shared surface, and not be the main vehicular route into the development, therefore widening the road for a pavement is not necessary.

Another objective for the site was increasing cycle and pedestrian permeability. Three additional access points are proposed within the new landscape masterplan, two to the east and one to the west to link the site with the adjoining neighbourhoods, so that it is easy for the locals to benefit from the new amenity of the site. The access route to the west and the southern eastern access will enable cycle access in addition to pedestrian access with a wide gate and paths leading on from these access points.

The third access point to Cheshire Homes development to the northeast will be for pedestrians only, as here narrower 1.2m bark chip paths connect with the site so as not to interfere with root protection zones. All pedestrian/cycle access points will be secured with lockable cast iron gates, but these are intended to stay open for the majority of the time.

Provision is made in the landscaping proposals for potential future pedestrian and cycle connections that would facilitate permeability through the site boundaries with the residential estates of Arundel and Richmond Park, respectively, and the former Cheshire Home site, subject to agreement with those parties and/or Dún Laoghaire-Rathdown County Council, as appropriate.

These proposed access points can be seen on the General Arrangement Drawing supplied by Cameo+Partners Ltd as part of the submission.

5.5.8 Car Parking and Cycle Parking

The proposed development provides car parking for both the residential and non-residential components of the scheme, totaling in 227 no. spaces, comprising:

- 212 no. residential spaces
- 8 no. food & Beverage car spaces
- 7 no. creche spaces

The parking proposal also includes 12 no. cargo bike spaces and 8 no. motorcycle spaces.

In terms of cycle parking, the total residential cycle parking provision will be 713 no. long stay spaces and 346 no. short stay spaces (a total of 1,071 no. spaces).

5.5.9 Site Utilities

Foul Infrastructure

The wider area is served by the Ringsend Wastewater Treatment Plant, which has treated Dublin's wastewater since 1906 and is the largest plant in Ireland providing 40% of the Country's treatment capacity (water.ie). The plant includes secondary treatment with capacity PE of 1640000 (EPA Maps, 2022). There are no other EPA licenced waste-water treatment facilities within 10 km of the site.

The Irish Water service drawings identifies that a main combined sewer exists running under on the line of the Stradbrook/Monkstown Stream was obtained. The main is a 450mm diameter vitrified clay (VC) line flowing towards Carrickbrennan Road with an existing manhole for connection 1 at the Western end of the Purbeck Lodge and Dalguise House site intersection while proposed connection 2 is adjacent western boundary to the Drayton Close estate.

A further 450mm diameter Irish Water/ DLRCC Vitrified Clay (VC) combined line exists, which runs from the Monkstown Valley development onto the application site, current entrance/exit roadway, and onto Monkstown Road, down Albany Avenue before connecting onto a main combined line on Seapoint Avenue.

Dalguise House is served by a separate septic tank and percolation area located in the lands outside to the Walled Garden on the western boundary. This will be removed during the construction phase.

Water Supply

Irish Water is responsible for managing and delivering water services to homes and businesses served by Public Water Supplies and Wastewater Agglomerations.

Potable water supply for Monkstown (as well as Blackrock, Booterstown, Clonkeen, Deansgrange, Dún Laoghaire Town, Foster's Avenue, Roebuck, Oatlands, Orpen, Pottery Road and Stradbrook) is from the Stillorgan Reservoir (DLR Co Council, 2022). Stillorgan is a treated-water reservoir that receives water that has been processed in Ballymore Eustace or Vartry, before it is dispersed through the network of pipes to a total population of 200,000 people in South Dublin. It is located approximately 3km from the site.

There is an existing 160 dia. HPPE or equivalent, Irish Water water main on Monkstown Road this was located during a previous site walk over (12 January 2022) and has been confirmed by Irish Water.

Electricity and Gas Infrastructure

The development shall be supplied from the local ESB Networks Medium Voltage Network, which includes Medium Voltage Sub-Stations on Brighton Avenue and at Richmond Park. The development will be supplied from the Monkstown Road direction, with potential future linkage to the Richmond Park substation, and to locate 2 No. Substations within the development, one in Block E and one to the rear of the site in the vicinity of Block H. The location and ratings of Sub-Station shall be considered to satisfy architectural and engineering design freedom and also to satisfy the statutory requirements of ESB Networks.

As part of the development, a low-pressure gas distribution network shall be extended by Gas Networks Ireland from the existing gas supply network, to supply gas to the various tenant units proposed throughout the development. It is not proposed to supply gas services to individual residential units.

Telecommunications

All main roads / boulevards within the development shall contain ducting / cable ways and chambers as deemed necessary for the servicing of the site. The immediate surroundings of the site are currently serviced by Eir and Virgin Media infrastructure, which will be extended within the site to meet the needs of the development. Fibre-to-the-Home will be extended to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements.

6.0 CONSULTATION

6.1 Introduction

This Chapter describes the consultation process in respect of the proposed project.

The EIA Directive places emphasis on effective public participation in decision-making procedures for projects that require EIA.

This planning application will be submitted following the consultations prescribed by the LRD legislation Section 2 of the Planning and Development (Amendment) (Large-scale Residential Development) Act 2021. and includes:

Stage 1 –Pre-Application Consultation with Dún Laoghaire Rathdown County Council under Section 247 of the Planning and Development Act 2000, as amended.

Stage 2 – LRD Meeting with Dún Laoghaire Rathdown County Council under Section 32C of the Planning and Development (Large Scale Residential Developments) Act 2021.

Stage 3 – Planning Application to be submitted directly to Dún Laoghaire Rathdown County Council with statutory public consultation.

Stage 4 – Appeal to An Bord Pleanála.

6.2 Consultation with Dún Laoghaire-Rathdown County Council – Stage 1

Significant pre-application consultation took place with Dún Laoghaire Rathdown County Council (DLRCC) as part of the pre-planning process. A Section 247 meeting was held between representatives of the Planning Authority and the Applicant and Design Team on Friday 25th February (Ref PAC/LRD1/002/22). The main issues discussed related, inter alia, to Conservation, Transportation, Drainage, Landscaping, and Part V. That consultation informed the formal LRD pre-application submission.

Throughout the pre-application consultation process with DLRCC, discussions were undertaken with the following Council departments:

- Planning
- Conservation
- Roads and Transportation
- Parks and Landscaping
- Drainage

6.3 LRD Pre-Application Consultation – Stage 2

In line with Section 32B of the Planning and Development (Large Scale Residential Developments) Act 2021, an LRD meeting was requested with Dún Laoghaire Rathdown County Council and a meeting was held on 16th June 2022. The LRD Meeting was allocated reference no. PAC/LRD2/006/22.

The documentation provided to Dún Laoghaire Rathdown County Council at this stage included a detailed screening and scoping report in respect of Environmental Impact Assessment.

The key issues for further consideration, as identified by Dún Laoghaire Rathdown County Council in their Opinion, were:

- Development Strategy
- Design Strategy
- Drainage
- Landscaping
- Traffic and Transport Assessment

The discussions and following Opinion from the Planning Authority which is addressed in detail in the *Response to Dún Laoghaire Rathdown County Council Opinion*, prepared by Tom Phillips + Associates) resulted in a number of changes to the scheme. Refer to the enclosed *Response to Dún Laoghaire Rathdown County Council Opinion* for full details.

6.3.1 Other Consultation

Consultation with Irish Water

Consultation with Irish Water Consultation was first undertaken with Irish Water in the form of a pre-connection enquiry back in December 2021 as the Masterplan proposal was emerging to ensure sufficient capacity in the system. It was confirmed IN March 2022 that subject to further details and conditions, the proposed connection to Irish Water network(s) to provide for the proposal could be facilitated. In September 2022 we received an updated Confirmation of Feasibility ahead of the planning submission. This detailed in the Confirmation of Feasibility letter from Irish Water enclosed as Appendix A of the Engineering Services Report prepared by BLP.

In summary the project works associated with the Irish Water comments are as follows:

1. Water: An existing 150mm watermain on Purbeck Road approximately located at the proposed bridge location will be connected to facilitate the development. A secondary connection is required to the existing 4" /100mm UPVC watermain to the East of the site.

2. Wastewater: The developments foul sewers will connect into the existing 450mm combined sewer in the Stradbrook Stream North of the development.

3. Surface Water: All surface water (rainwater) collected on site will be flow through various SUDs facilities before entering the development storm network and attenuation systems leading to controlled discharge to the Stradbrook Stream at two locations.

Further to this, a design submission was made to Irish Water on the basis of the final proposal. On 6 October 2022, Irish Water confirmed that it has no objection to the proposals with a Statement of Design Acceptance.

Consultation in relation to Ecology and Nature Conservation

The consultees listed in Table 6.1 were contacted and invited to submit any observations in relation to ecology and nature conservation. Observations received relevant to this chapter are summarised in Table 6.1 below. Concerns raised by the consultees have been addressed as far as possible.

The purpose of the consultations was to:

- Identify any relevant information that consultees held, including the presence of data on protected species or species of conservation concern;
- Identify any concerns that consultees may have in relation to the proposed development; and,
- Identify any issues that the consultees would like to see addressed during the ecological impact assessment process.

Table 6.1 Details of Consultations

Consultee	Date	Summary
Department of Housing, Department of Housing, Local Government and Heritage (National Parks & Wildlife Service)Local Government and Heritage (National Parks & Wildlife Service)	24th March 2022	A response to the consultation request was received from the NPWS. The NPWS made the following observations: • All the measures to prevent sediments and other potential pollutants entering the Stradbrook Stream set out in the Outline Construction Management Plan and the EcIA supporting this application are implemented in full; and that a Construction and Environmental Plan detailing these measures and the methodology and timetable for their implementation be submitted for the written agreement of the Planning Authority before any development commences on site. • Any clearance of vegetation from the development site should only take place outside the main bird nesting season i.e. in the period from the 1st of September to the end of February. • A grey heron conservation plan for the Dalguise House site should be drawn up by the applicant, in consultation with the Biodiversity Officer of Dún Laoghaire- Rathdown County Council and submitted for the written agreement of the

Consultee	Date	Summary
		planning authority before any development commences on site. • All measures set out in the submitted Bat Impact Assessment and EcIA to conserve bats during the construction and occupational phases of the proposed development should be implemented in full, these to include further bat surveys preceding any building demolition or tree felling, the supervision of such demolition and felling by a bat specialist, the provision of bat boxes and installation of bat friendly lighting.
Inland Fisheries Ireland (IFI)	12th January 2022	A response to the consultation request was received from IFI. IFI made the following observations: IFI stated the following: • Best practice should be implemented at all times in relation to any activities that may impact on surface water. • Disturbance of riparian habitats should be minimised. • Good housekeeping measures are integral to achieving prevention of excessive turbid run-off to surface water systems. • An Invasive Species and Biosecurity Plan should be included to treat and manage identified invasive species onsite. • The specific details of any works directly affecting watercourses or riparian habitats in the area, in particular surface water discharges to the stream must first be submitted to IFI for assessment. In addition to this, IFI highlighted best practice guidance material which should be followed in order to avoid negative effects on surface waters.
Dún-Laoghaire Rathdown County Council Biodiversity Officer	27th June 2022	The Biodiversity Officer referred to the Biodiversity Action Plan and DLR Otter Survey, and also made the following observations: • Surveys of rare and protected species including large mammals, bats, invasive species, plants and breeding birds should be undertaken by specialists. • Examine how the watercourse can be improved as a result of the proposed development. • Cumulative Impacts should be considered. • The Zone of Influence for the proposed development should be considered. • Opportunities to improve the area including the riparian habitat within the zone of influence should be looked at. • Investigate if there is a weir which can be removed as part of enhancement measures.

Consultation in relation to Architectural Heritage Conservation

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage (DoHLGH) – the Heritage Service, National Monuments: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database and Preservation Orders;
- Dublin City Heritage Plan
- Architectural Heritage Protection, Guidelines for Planning Authorities 2011
- Dún Laoghaire-Rathdown County Council: Planning Section.
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps.

6.4 Planning Application – Stage 3

This planning application is submitted directly to Dún Laoghaire-Rathdown County Council for assessment; as part of this, further consultation will take place. This will comprise the public display of the application and all accompanying documents. Any submissions arising from the consultation process will be submitted directly to Dún Laoghaire-Rathdown County Council and considered as part of the decision-making process.

Prior to lodging this application, the required information has also 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.

6.4 Appeal to An Bord Pleanála– Stage 4

The applicant of an LRD can make a First Party appeal to An Bord Pleanála within four weeks of receiving a decision from the planning authority. A third party-appeal can be lodged by any parties that have made an observation/submission to the planning authority on the proposed LRD within four weeks of a decision being made by the Planning Authority. The board is required to determine LRD appeals within 16 weeks of receipt of the appeal, where no oral hearing or additional information has been requested

7.0 POPULATION AND HUMAN HEALTH

7.1 Introduction

This chapter has been prepared to assess the likely significant impacts on Population and Human Health in respect of the Proposed Development (as defined in Chapter 5 of this EIA Report).

This Chapter was prepared by Jonathan Gauntlett and David Doran.

Jonathan Gauntlett is a Principal Environmental Consultant in AWN Consulting with experience in impact assessment, licensing, environmental compliance and project management. Recent projects include; Strategic Housing Development including EIAR and EIA Screening Reports, SID and planning applications for ICT facilities; EPA Licence applications for biopharma and ICT facilities. Jonathan has over 10 years' experience in environmental compliance, planning and management of Environmental Impact Assessments, licensing, and urban planning. Jonathan has a BSocSc (Environmental Planning) and BBA (Economics) from the Waikato University in New Zealand and has experience working in the environmental consultancy, planning, and regulatory fields from Ireland, the UK and New Zealand.

David Doran is an Environmental Consultant with AWN Consulting with over 2 years' experience in the environmental sector. David has a MSc in Environmental and Energy Management (Hons) and is an Affiliate member of the Charted Institute of Waste Management. Recent projects include; Strategic Housing Development / Large Scale Residential Developments, office developments, logistics park developments and other residential, commercial and industrial developments. Inputs for these include EIA Screening Reports, Waste Management EIAR Chapters, Operational and C&D/Resource Waste Management Plans and Human Health EIAR Chapters.

This chapter presents the potential for impacts associated with noise and vibration and air quality and climate on human health. The discipline-specific sections have been reviewed by the relevant consultant. Details presented below.

- Noise and Vibration

  Leo Williams BAI MAI PgDip MIOA, Senior Acoustic Consultant at AWN Consulting who has over 6 years' experience as an environmental consultant specialising in Acoustics and Environmental Impact Assessment. He graduated from TCD with a BA, BAI (Mechanical and Manufacturing Engineering) and an MAI (Mechanical and Manufacturing Engineering). Leo is a Member of the Institute of Acoustics and has extensive experience in environmental noise impact assessment, in particular residential developments, industrial/manufacturing and renewable energy noise sources. He has experience in room and building acoustics modelling and assessment. He has completed the IOA Diploma in Acoustics and Noise Control and is a registered sound insulation tester under the Sound Insulation Testing Register, Ireland (SITRI).

- Air Quality and Climate

- Dr. Edward Porter is Director with responsibility for Air Quality with AWN Consulting. He holds a BSc from the University of Sussex (Chemistry), has completed a PhD in Environmental Chemistry (Air Quality) in UCD where he graduated in 1997 and is a Full Member of the Royal

Society of Chemistry (MRSC CChem), the Institute of Environmental Sciences (MIEnvSc) and the Institute of Air Quality Management (MIAQM). He specialises in the fields of air quality, EIA and air dispersion modelling.

The EU (2017) *Guidance on the preparation of the Environmental Impact Assessment Report* outlines that human health is a very broad factor that is be highly project dependent. This guidance states:

> *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.*

7.2 Methodology

The World Health Organization (WHO) Constitution defines health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO 1948). This assessment, therefore, includes consideration of potential impacts of the Proposed Development on physical, mental and social aspects of health in the context of environmental pathways such as air quality, noise, water, soil quality and visual impact. All can contribute to effects on human health, for example by facilitating the transport of contaminants or effecting the views available to persons due to the construction of the Proposed Development. An evaluation of the effects of these pathways on health, by considering the accepted standards of safety in dose, exposure or risk of air quality and noise levels for example, is considered appropriate, as these standards have been arrived at via scientific and medical research.

The EPA (2015) Advice Notes explains that the scope of population and human health is project dependant but should consider significant impacts likely to affect aspects such as: convenience (expanded range of transport options); displaced settlement patterns (residential); employment opportunities; land use patterns; access for tourism, amenity, health impacts and/or nuisance due to noise, dust or water pollution; and health and safety. The likelihood of significant effects on the population within the study area (see Section 7.2.3), as well as the wider area where deemed appropriate, have been assessed in this EIAR chapter.

Furthermore, in accordance with the EPA (EPA, 2022), 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 the EIAR. The likely significant impacts on with Human Health and Population in regards to issues such as soils, geology and hydrogeology, water, air quality, noise and vibration, traffic and landscape are addressed in detail within the following EIA chapters:

- Chapter 9 – Land, Soils, Geology and Hydrogeology;
- Chapter 10 –Hydrology;
- Chapter 11 –Air Quality and Climate;
- Chapter 12 –Noise and Vibration;
- Chapter 13 –Landscape and Visual;

- Chapter 14 (Cultural Heritage and Archaeology);
- Chapter 15 (Architectural Heritage);
- Chapter 17 (Material Assets - Roads and Traffic);
- Chapter 19 (Material Assets – Site Services); and
- Chapter 21 (Cumulative Impacts)

Where these topics are dealt with in further detail elsewhere in this EIA Report, the relevant chapters have been cross referenced in this Chapter to provide the Planning Authority with a context for their determination.

The assessment of other health and safety issues that are carried out under other EU Directives are also relevant. These may include reports prepared under the Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Water Framework Directive, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR considers the results of such assessments without duplicating them.

The EPA Guidelines (2022), notes that the transposing legislation does not require assessment of land-use planning, demographic issues or detailed socioeconomic analysis (EPA, 2022). Furthermore, the EPA Advice Notes (2015) states that issues such as employment, commercial competition, zoning, property prices, agri-business and other social and economic issues are dealt with by more specific instruments (such as the Planning Acts) *(EPA, 2015)*.A desktop study of the available data has been conducted to identify likely sensitivities of the study area and characterise it in terms of various demographic measures. This is complete to inform the Planning Authority on the broad demographic trends within the study area.

7.2.1 Relevant Legislation and Guidance

The chapter has been prepared in accordance with:

- Environment Protection Agency, *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022)
- *Advice Notes for Preparing Environmental Impact Statements* Draft (2015),
- European Commission (EC)*, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report* (EU, 2017)
- Institute of Public Health (IPH), *Health Impact Assessment Guidance: A Manual* (2021)
- (EUPHA) *Human Health: Ensuring a High Level of Protection*. A reference paper on addressing Human Health in Environmental Impact Assessment
- *Health Impact Assessment in Planning* (IEMA 2020);
- *Healthy Ireland - A Framework for Improved Health and Wellbeing 2013 – 2025* (the Healthy Ireland Framework) (Department of Health 2019);
- *Environmental Noise Guidelines for the European Region* (WHO 2018);
- *Environmental Impact Assessment of Projects*. Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017);
- *Health in Environmental Impact Assessment – A Primer for a Proportionate Approach* (Cave et al. on behalf of Institute of Environmental Management and Assessment (IEMA)) (IEMA 2017).

This chapter follows these guidelines and will examine the relevant human health and population effects that have the potential to result from the proposed development as they relate to the relevant study area.

The description of the sensitivity, magnitude and significance, outlined within this assessment are based on the Health Impact Assessment Guidance (IPH, 2021) criteria, while the probability and duration of effects are based on the definitions set out within Section 3.7 of the 'Guidelines on information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

7.2.2 Data Sources of information

The following sources of information have been used in this assessment:

- 2011 Census carried out by the Central Statistics Office (CSO) 10 April 2011. Made available from https://www.cso.ie/en/
- 2016 Census carried out by the Central Statistics Office (CSO) 24 April 2016. Made available from https://www.cso.ie/en/
- Pobal HP Deprivation Index based on 2011 Census Data (CSO) Made available from https://www.pobal.ie/
- Pobal HP Deprivation Index based on 2016 Census Data (CSO) Made available from https://www.pobal.ie/
- Google maps available from https://www.google.com/maps
- OpenStreetMap and contributors available from https://www.openstreetmap.org
- GeoHive contributors and available from https://www.geohive.ie/
- Health Safety Authority (2021) – www.hsa.ie
- HSE Service Records (2021) – www.hse.ie
- Central Statistics Office (2021) – CSO PxStat
- ESRI (2021) - Quarterly Economic Commentary, Winter 2021

7.2.3 Study Area

There is no specific guidance available on an appropriate study area to focus the assessment of existing land use and/or permitted projects. The research area has been established using expert judgement and based on the accessibility of data and taking into consideration the potential for impact from the proposed development.

It is acknowledged that projects like the one proposed can have an impact on activity in a larger area other than only the site itself. Generally, the closer to the works, the greater the potential for impacts. The most significant environmental impacts are likely to be confined within 50-150 m of the proposed development. Some effects from the Proposed Development, including air quality and traffic, might have a larger area of effect, and these are addressed in further detail in the corresponding expert assessments that set out the chapters within this EIAR. Projects such as the proposed development, may have operational impacts which effect the population outside of the 50-150m zone. The project being considered, is not expected to have Regional, National or International, or Transboundary impacts on Human Health. Therefore, the Study area has been restricted to the neighbouring community (site-specific population), and wider community (local population). A general study area of 1 km from the site location is included for population statistics, while county and national statistics (where available) were used in addition to these where this was the only

available information or as a relativistic measure to inform the baseline description of the area.

In the desk-based assessment of Population Health Sensitivity the use of Electoral Divisions (ED) statistics from CSO have been utilised. Electoral Divisions are the smallest legally defined administrative areas in the state; developed with the intention of producing areas roughly equivalent in both population and "rateable value" (CSO).

The Proposed Development site is located in County Dublin, and in the electoral district of Blackrock-Monkstown (ED 5012). The area selected for the assessment of the impact on human health has been defined as the EDs of Blackrock-Monkstown, Blackrock-Carysfort (ED 5009), Blackrock-Newpark (ED 5013), Blackrock-Seapoint (ED 5014), Blackrock-Stradbrook (ED 5015), Blackrock-Templehill (ED 5016), Dun Laoghaire-Monkstown Farm (ED 5045), Dun Laoghaire-Mount Town (ED 5046) and Dun Laoghaire-Salthill (ED 5051). Reference is made to the most recent census data available from the Central Statistics Office (CSO) which is the 2016 census. Furthermore, this assessment considers the proximity to social, commercial and emergency services within the study area.

7.2.4 Population Impact Assessment Categories

7.2.4.1 Assessment Sensitivity of Population

The assessment of significance of an impact is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect. Within any area, the sensitivity of individuals in a population will vary. The Health Impact Assessment Guidance (IPH, 2021) sets out conceptual model of the different components of sensitivity (Figure 7.1). It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of sensitivity. The conclusion may be summarised as a high, medium, low or negligible sensitivity to change.

The existing sensitivity of the receiving environment (in terms of population and human health) has been appraised for the study area with a desk-based assessment of routine demographic and health indicators, rather than the use of surveys or collection of primary data. This includes analysis of existing data (based on the availably of information) from the Central Statistics Office (CSO) and Pobal to build up a profile of the baseline population information within the study area. Topographical maps and Google maps have also been used to inform the baseline description of the area to inform the proximity of the Site to areas of economic activity, employment, community infrastructure, emergency services, tourism and recreation amenities.

Within any area, the sensitivity of individuals in a population will vary. As such, if an overall sensitivity classification was assigned to the population in question, it would not be a fair representation of the range of sensitivities within that population. As such, the precautionary principle has been adopted for this assessment, which assumes that the population within the study area is of a uniformly high sensitivity.

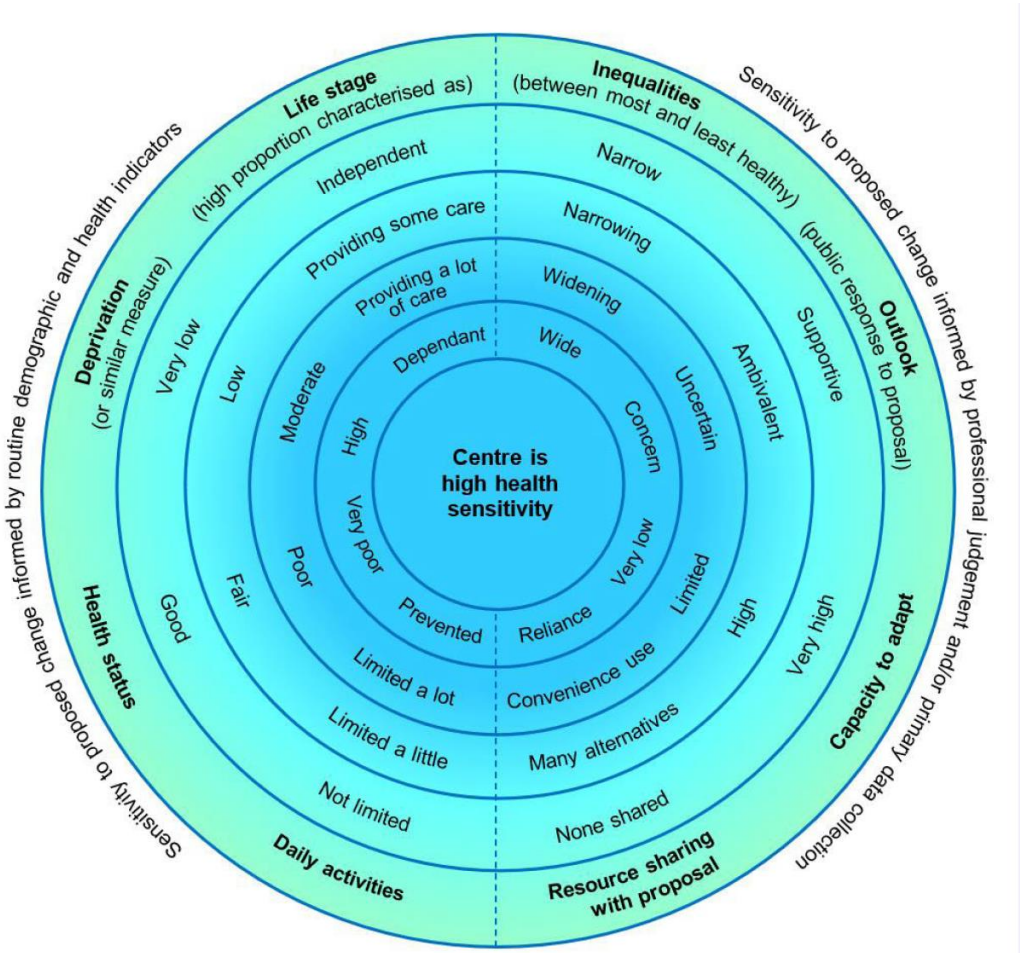

Figure 7.1 **Health sensitivity: conceptual model** (Source: Health Impact Assessment Guidance (IPH, 2021))

7.2.4.2 Magnitude of Impact

Magnitude considers the characteristics of the change which would affect the receptor as a result of the proposal. The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of sensitivity (Figure 7.2). Again, this model provides different components of *magnitude*. It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding of *magnitude*. The conclusion may be summarised as a high, medium, low or negligible magnitude of change.

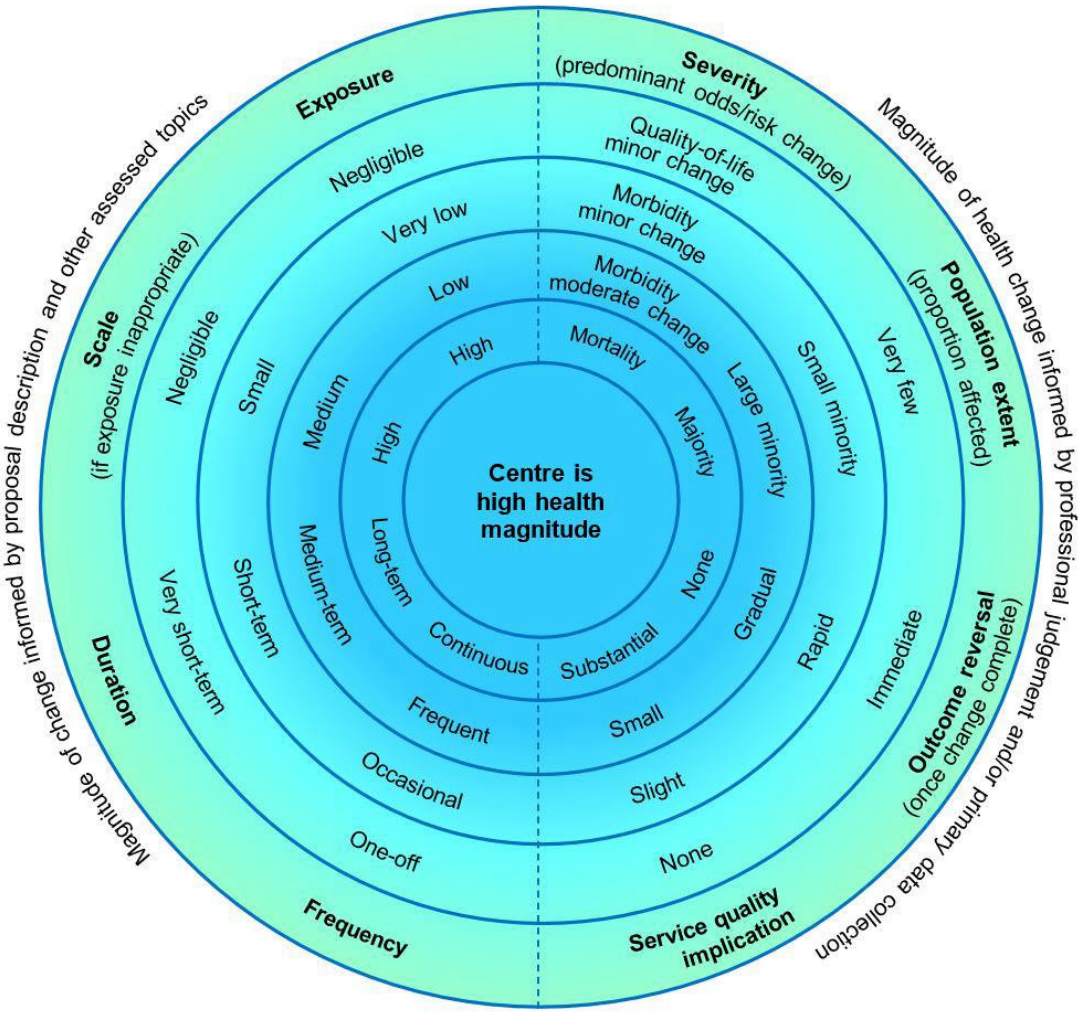

Figure 7.2 **Health magnitude: conceptual model** (Source: Health Impact Assessment Guidance (IPH, 2021))

7.2.4.3 Significance of Effects

Significance relies on informed, expert judgement about what is important, desirable or acceptable with regards to changes triggered by the proposal in question. The assessment of the significance of effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of the effects and the sensitivity of the receptor.

The Health Impact Assessment Guidance (IPH, 2021) sets out a conceptual model of the different components of significance. It uses criteria (segments) and indicative classifications (levels) to explore, and explain, a finding that a health effect is significant or not significant.

The Health Impact Assessment Guidance (IPH, 2021) model brings together different types of evidence, e.g. scientific literature, public health priorities, regulatory standards and health policy. The model thus not only take into account a range of evidence sources, but also a diversity of professional perspectives, e.g. academics, public health practitioners, regulators and policy makers.

The model below, includes the factors of magnitude of impact and the sensitivity of receptors. This EIA assessment typically relies on regulatory thresholds, where there would be formal

monitoring by regulators, to set out the acceptability or desirability of change to population health.

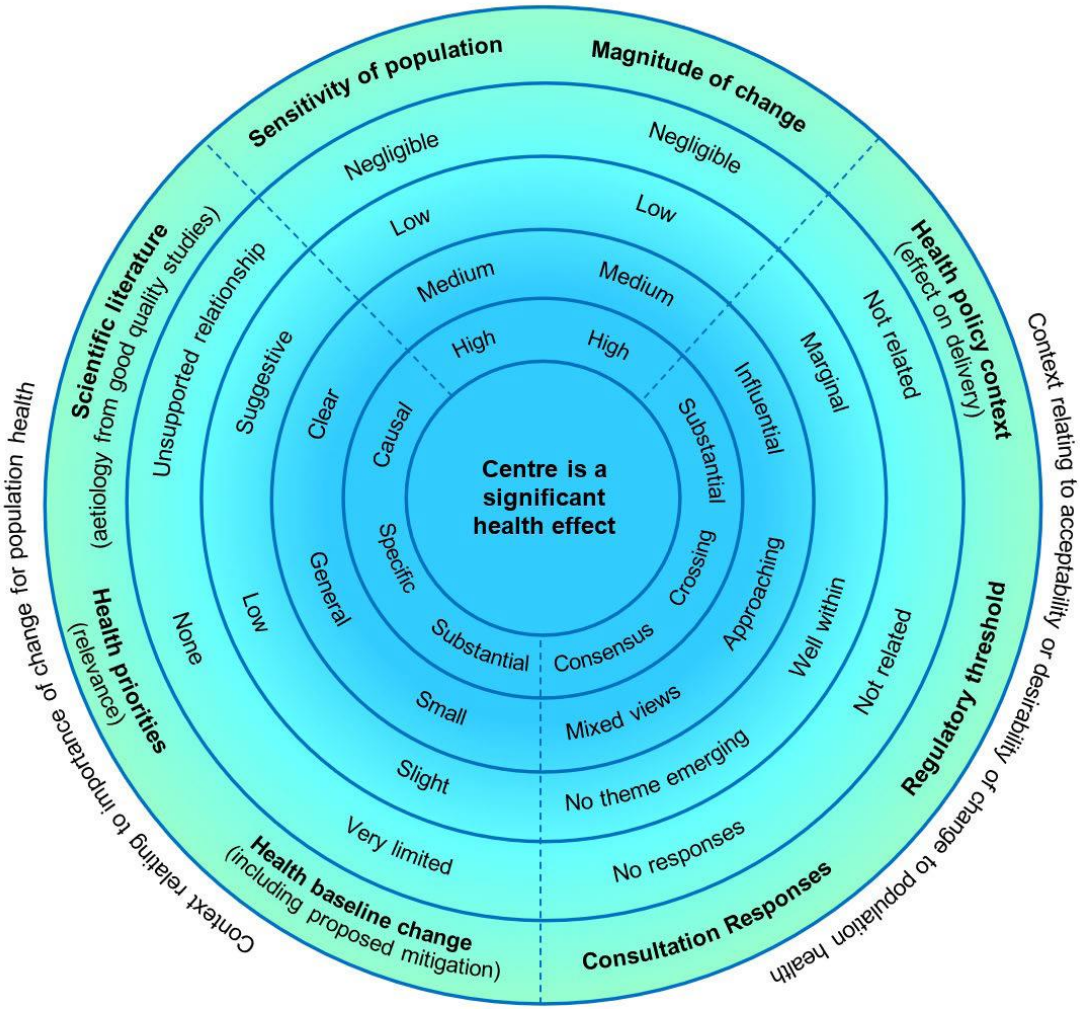

Figure 7.3 **Health significance: conceptual model** (Source: Health Impact Assessment Guidance (IPH, 2021))

7.2.5 Difficulties Encountered / Forecasting Methods

No particular difficulties were encountered in preparing the population assessment.

There are uncertainties in relation to assessing impacts on individuals or communities due to the lack of individual health data and the difficulty in predicting effects, which can only be based on general guidance and assumptions.

Forecasting methods and methodology, if any, are set out within the specialist chapters that this assessment relies upon.

7.3 Receiving Environment

7.3.1 Population Health Sensitivity within the Study Area

The purpose of the population health sensitivity assessment is to identify the likely sensitivity of the local population and its capacity to absorb change. It is considered that for the purpose

of this assessment that available data on: Population; Deprivation; Life Stage; and Health Status within the Study Area provides sufficient information to establish the population sensitivity and to provide the Planning Authority with a context for this assessment.

7.3.1.1 Population

Table 7.1 and 7.2 denotes the population change for the state, and electoral districts for the census years 2011 and 2016. The census data shows that the population of Blackrock-Monkstown ED, the area surrounding the development site, increased in size by 5.4% between the years 2011 and 2016 compared with an increase of 3.8% nationally. The average rate of population growth across the study area was an increase of 3.88%. The general increase in growth rate of surrounding areas, when compared to the state figures, suggests the increasing economic role of the areas surrounding the Proposed Development site.

Table 7.1 State Population change 2011 – 2016 *(Source: www.cso.ie)*

Area	2011	2016	% Change
State	4,588,252	4,761,865	3.8%

Table 7.2 Study Area Population change 2011 – 2016 *(Source: www.cso.ie)*

Local Electoral Divisions	2011	2016	% Change
Blackrock-Monkstown	**3,073**	**3,239**	**5.40%**
Blackrock-Carysfort	6,160	6,318	2.56%
Blackrock-Newpark	2,164	2,316	7.02%
Blackrock-Seapoint	1,438	1,450	0.83%
Blackrock-Stradbrook	2,299	2,462	7.09%
Blackrock-Templehill	2,687	2,658	-1.08%
Dun Laoghaire-Monkstown Farm	2,095	2,225	6.21%
Dun Laoghaire-Mount Town	1,734	1,779	2.60%
Dun Laoghaire-Salthill	1,623	1,729	6.53%
Cumulative ED Study Area	23,273	24,176	**3.88%**

7.3.1.2 Deprivation

The Health Impact Assessment Guidance (IPH, 2021) outlines that impact assessments should consider if the population is already stressed by limited resources or high burdens as well as if groups are affected that have reduced access to financial, social and political resources. Deprivation differences between areas are indicative of social gradients, which are central to the consideration of health inequalities.

Deprivation statistics for Ireland are available from the Pobal HP Deprivation Index that shows the overall affluence and deprivation. This Index draws on data from the national Census and combines three dimensions of relative affluence and deprivation: Demographic Profile, Social

Class Composition and Labour Market Situation that are measured by ten key socio-economic indicators from the Census of Population.

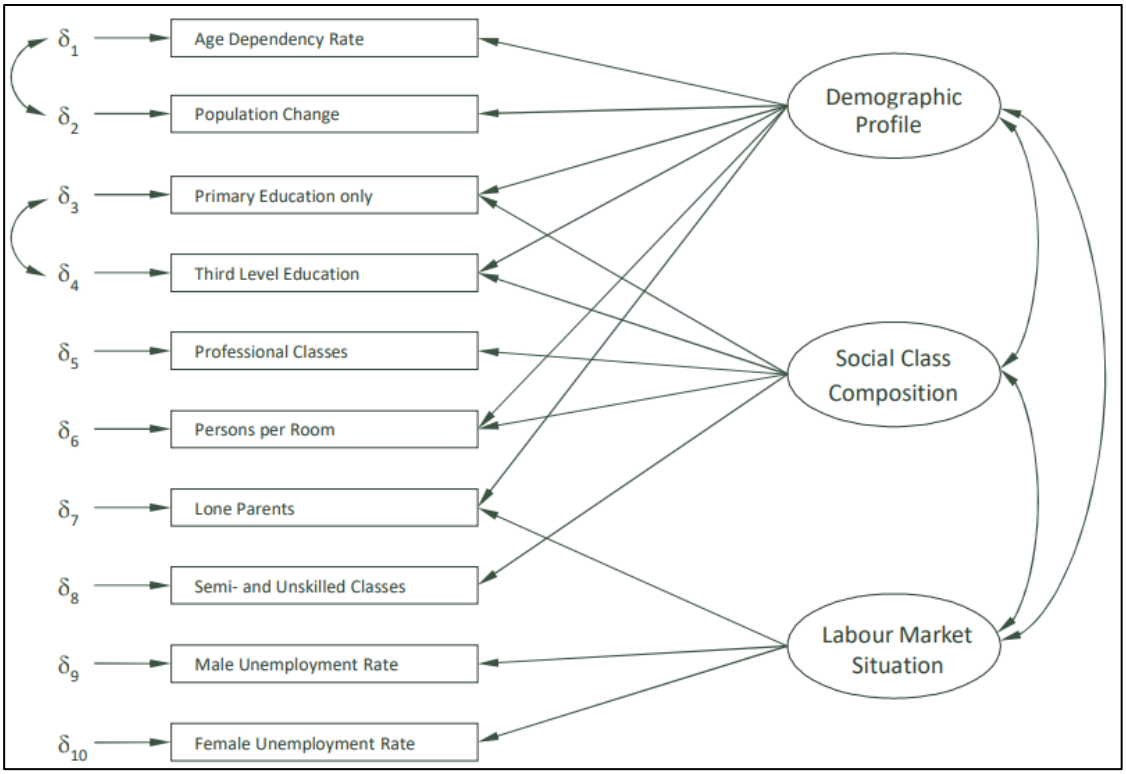

Table 7.3 Basic Model of the Pobal HP Deprivation Index

The Pobal HP Deprivation Index Relative Index Score allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in Table 7.3 below.

In order to make a uniform assessment using the conceptual model as set out in Figure 7.3 above a relative Population Sensitivity the Deprivation Score of 'Very disadvantaged', or 'Extremely disadvantaged' would represent a high sensitivity. Conversely, a 'Extremely affluent' or 'Very affluent' would represent a very low sensitivity.

Table 7.4 Pobal HP Index Relevant Index Score labels *(Source: Pobal HP Deprivation Index)*

Relative Index Score	Label	Sensitivity of Population
> 30	Extremely affluent	Very Low
20 – 30	Very affluent	Very Low
10 – 20	Affluent	Low
0 – 10	Marginally above average	Low
0 – -10	Marginally below average	Moderate
-10 – -20	Disadvantaged	Moderate
-20 – -30	Very disadvantaged	High
< -30	Extremely disadvantaged	High

The data in Table 7.4 shows the Pobal HP Index Relevant Index Score Figures at a local and County level (*Source: Pobal HP Deprivation Index).* These figures show that the population living within the study area are most commonly classified as 'Affluent' (4 EDs) and 'Marginally Above Average' (4 EDs), while one ED is classified as 'Marginally Below Average'. The county of Dublin is classified as 'Marginally Above Average' for the year 2016. Figure 7.4 below presents the Pobal HP Index map illustrating the Study Area. This indicates a Low-Moderate Population Sensitivity (Deprivation) within the study area.

Table 7.5 Pobal HP Index Relevant Index *(Source: Pobal HP Deprivation Index)*

Area	Relative Index Score	Pobal HP Description 2016
Dublin County	4.12	Marginally Above Average
Blackrock-Monkstown	**13.95**	**Affluent**
Blackrock-Carysfort	13.22	Affluent
Blackrock-Newpark	9.75	Marginally Above Average
Blackrock-Seapoint	14.16	Affluent
Blackrock-Stradbrook	7.48	Marginally Above Average
Blackrock-Templehill	9.54	Marginally Above Average
Dun Laoghaire-Monkstown Farm	2.64	Marginally Above Average
Dun Laoghaire-Mount Town	-2.33	Marginally Below Average
Dun Laoghaire-Salthill	12.64	Affluent

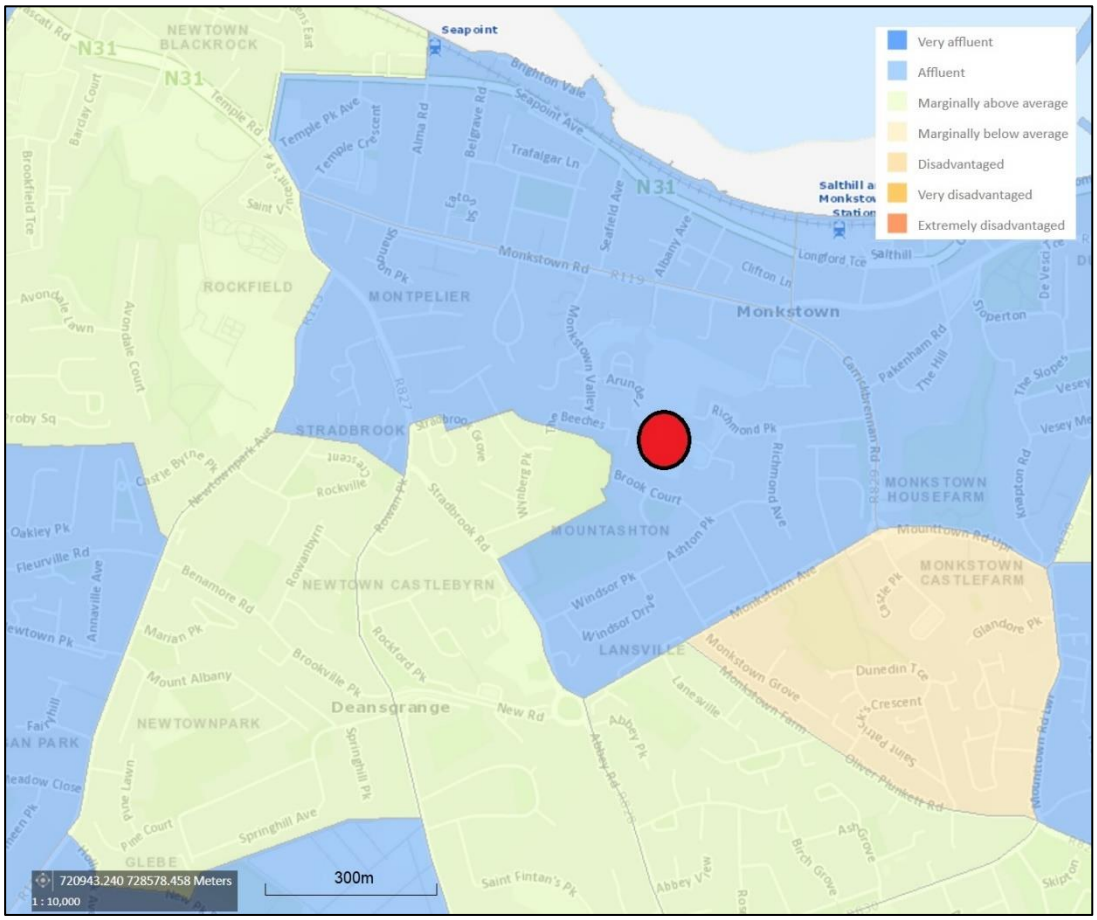

Figure 7.4 **Pobal HP Index Electoral Division, Site is indicated with a red dot** *(Source: Pobal HP Deprivation Index)*

7.3.1.3 Life Stage (Age Dependency)

The Health Impact Assessment Guidance (IPH, 2021) outlines that life-course analysis is often used in public health and reflects differing health sensitivities and needs at different ages. Typically, children and older people are particularly sensitive to change, including due to being dependants. Dependents are defined for statistical purposes as people outside the normal working age of 15-64. Dependency ratios are used to give a useful indication of the age structure of a population with young (0-14) and old (65+) shown as a percentage of the population of working age (15-64).

A low dependency ratio indicates that there is a larger proportion of working population age (15–64) years as compared to young (0-14) and old (65+). Conversely, a high dependency ratio indicates that there is a larger proportion of young (0-14) and old (65+) as compared to working population age. High dependency ratio can also indicate if some groups are more likely to be at home during the day (for example, due to childcare, or retired persons) and would therefore be more likely to be impacted by a development within the area.

Age dependency ratio are available through the Pobal Online Geo-Profiling tools (https://maps.pobal.ie/) which are based on the national Census.

The age dependency ratio for the study area is shown in Table 7.5 below. From these dependency ratios we can tell that the study area is less dependent when compared with ROI as a whole. Indicating a largely 'independent' population within the Study Area as compared ROI which can be defined as per the conceptual model as 'providing some care' to 'providing a lot of care'.

Table 7.6 Age Dependency Ratio within the Study Area *(Pobal Geo-Profiling, 2016 Census)*

Area	Age Dependency Ratio for Census Year	
	2011	2016
State - Republic of Ireland	49.30	52.70
Blackrock-Monkstown	**34.43**	**36.55**
Blackrock-Carysfort	32.16	32.72
Blackrock-Newpark	38.12	40.42
Blackrock-Seapoint	30.67	35.69
Blackrock-Stradbrook	35.84	37.32
Blackrock-Templehill	31.30	30.11
Dun Laoghaire-Monkstown Farm	32.98	34.07
Dun Laoghaire-Mount Town	33.68	32.27
Dun Laoghaire-Salthill	28.65	32.39
Study Area (Mean)	33.09	34.61

7.3.1.4 Health Status (General health)

The CSO as part of the census records an overall self-reported measure of population health within Ireland. Areas with a poor health status are typically considered to be of a higher sensitivity and more susceptible to change in environmental conditions.

Table 7.6 below shows the Self-reported measure of population health within the Study Area compared to ROI. This shows the area predominately self-reports their health as 'Very Good' in-line with national trends.

Table 7.7 Self-reported measure of population health *(CSO, 2016 Census)*

Area	% population describing their general health					
	Not Stated	Very Bad	Bad	Fair	Good	Very Good
State - Republic of Ireland	3.33%	0.29%	1.32%	8.04%	27.65	59.38%
Blackrock-Monkstown	2.83%	0.22%	1.62%	9.12%	26.38%	59.82%
Blackrock-Carysfort	3.56%	0.40%	1.06%	5.90%	22.25%	66.82%
Blackrock-Newpark	1.21%	0.65%	1.86%	8.89%	25.52%	61.87%
Blackrock-Seapoint	4.21%	0.14%	0.62%	5.17%	18.83%	71.03%
Blackrock-Stradbrook	1.99%	0.37%	1.42%	7.92%	26.20%	62.10%

Blackrock-Templehill	3.39%	0.64%	1.47%	7.19%	24.60%	62.72%
Dun Laoghaire-Monkstown Farm	3.61%	0.09%	0.59%	6.42%	24.76%	64.53%
Dun Laoghaire-Mount Town	6.80%	0.28%	1.57%	9.16%	26.59%	55.59%
Dun Laoghaire-Salthill	2.60%	0.23%	0.93%	5.90%	25.91%	59.82%
Study Area (Mean)	3.36%	0.34%	1.24%	7.30%	24.56%	63.21%

7.3.1.5 Ability to perform daily activities

People's ability to perform day-to-day activities is relevant to population sensitivity, particularly where there are changes in access to services or community amenities. Persons with disabilities can also be more susceptible to the changes in environmental conditions. The CSO as part of the census records an overall self-reported measure of persons with disabilities within Ireland.

Table 7.7 details the number of persons with a disability compared to the population as a whole. The data shows that the study area has a higher % of Persons with a disability than the national average; indicating that for persons within the area there is relatively greater restrictions on daily activity.

Table 7.8 Persons with a disability *(CSO, 2016 Census)*

Area	Persons with a disability	Population	% Persons with a disability
State - Republic of Ireland	643,131	4,761,865	11%
Blackrock-Monkstown	**368**	**3,239**	**13%**
Blackrock-Carysfort	794	6,318	18%
Blackrock-Newpark	422	2,316	10%
Blackrock-Seapoint	141	1,450	14%
Blackrock-Stradbrook	347	2,462	15%
Blackrock-Templehill	407	2,658	16%
Dun Laoghaire-Monkstown Farm	352	2,225	15%
Dun Laoghaire-Mount Town	260	1,779	12%
Dun Laoghaire-Salthill	211	1,729	11%
Study Area	3302	24,176	14%

7.3.1.6 Summary of Population Health Sensitivity

The sensitivity of the surrounding area has been considered based on the details of the published data available from CSO and Pobal. The study area has seen a population growth between the 2011 and 2016 census. The Pobal HP Deprivation Index shows the area be Affluent to Marginally Above Average, with one ED having a Marginally Below Average score indicating a Low - Moderate Population Sensitivity (Deprivation) within the study area.

There is a low age dependency ratio, therefore a large proportion of the population is within working age, thus considered as largely independent and judged to be not sensitive to change.

The information presented above for the study area shows, a high proportion [55.59 – 71.03] describes their health status as 'Very Good' and low proportion as 'bad' or 'very bad'. The data shows that the study area has a higher % of Persons with a disability than the national average; indicating that for persons within the area there is relatively greater restrictions on daily activity.

The population within the study area is therefore not particularly sensitive to change, with a ranking of low to medium sensitivity.

7.3.2 Location and Character of the Local Environment

The purpose of describing the location and character of the local environment provides useful information on the current local community and usage within the study area provide the Planning Authority with a context for this assessment. This includes community and social infrastructure that covers a range of services and facilities that meet local and strategic needs and contribute towards a good quality of life. In this context it includes local business, residential areas, education, health facilities, emergency services, and places of worship, and green infrastructure.

Furthermore, the baseline identifies tourism and landscape amenity within the study Area which provides an indication on current intrinsic values placed on the area for local, national and international users that may be impacted by the Proposed Development.

The local environment also includes areas of natural resources that relate to populations and human health that may be impacted by the proposed development, this includes economic resources, recreational and bathing waters, and drinking water resources.

A general study area of the ED in which the proposed development would be located and the adjacent ED's is included for population statistics.

7.3.2.1 Employment

Table 7.8 and 7.9 presents the employment statistics nationally and at the ED level in 2016 compared with 2011. The data shows that unemployment decreased significantly in the study area, as well as nationally, reflecting the economic recovery in recent years.

Table 7. 9 State Employment statistics 2011 and 2016 (*Source: www.cso.ie*)

	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in labour force	% Unemployment
2011 Labour Force - State	1,807,360	34,166	390,677	2,232,203	19.03%
2016 Labour Force - State	2,006,641	31,434	265,962	2,304,037	12.91%

Table 7. 10 Study Area Employment statistics 2011 and 2016 (*Source: www.cso.ie*)

	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in labour force	% Unemployment
2011 Labour Force					
Blackrock-Monkstown	**1,426**	**7**	**107**	**1,540**	**7.40%**
Blackrock-Carysfort	2704	28	221	2953	8.43%
Blackrock-Newpark	817	12	76	905	9.72%
Blackrock-Seapoint	613	10	62	685	10.51%
Blackrock-Stradbrook	964	8	119	1091	11.64%
Blackrock-Templehill	1139	18	143	1300	12.38%
Dun Laoghaire-Monkstown Farm	862	12	154	1028	16.15%
Dun Laoghaire-Mount Town	564	15	175	754	25.20%
Dun Laoghaire-Salthill	792	7	93	892	11.21%
Cumulative ED Study Area	9,881	117	1,150	11,148	11.37%
2016 Labour Force					
Blackrock-Monkstown	**1502**	**10**	**62**	**1574**	**4.37%**
Blackrock-Carysfort	2842	20	164	3026	6.08%
Blackrock-Newpark	908	4	67	979	7.25%
Blackrock-Seapoint	638	6	36	680	6.18%
Blackrock-Stradbrook	1056	7	80	1143	7.61%
Blackrock-Templehill	1227	21	109	1357	9.58%
Dun Laoghaire-Monkstown Farm	1010	19	99	1128	10.46%
Dun Laoghaire-Mount Town	730	12	133	875	16.57%
Dun Laoghaire-Salthill	866	7	66	939	7.77%
Cumulative ED Study Area	10779	106	816	11701	7.88%

7.3.2.2 Businesses

The proposed development site currently comprises the lands of Dalguise House, which consists of Dalguise House, associated buildings and structures, various other unoccupied residential dwellings and greenfield land. There are no businesses immediately adjacent the proposed development site boundary, however, Monkstown village lies c. 200m to the north-

east of the proposed development site which hosts a plethora of restaurants, pubs and various other businesses.

7.3.2.3 Residential Dwellings

There are significant concentrations of residential houses on all sides of the proposed development site. These residential houses are sensitive locations, which respect to proposed construction and operational works required for the proposed development.

Dalguise House is a currently unoccupied residential dwelling on the Proposed Development site. Aside from the part-demolition of basement area at Dalguise House (8 sq m), the house will be retained and repurposed as 3 no. apartment units at first floor level; a restaurant/cafe at basement level; and residents' amenities at ground floor level.

Partial demolition works will also take place at the Coach House (67 sq. m) which will then be refurbished, adapted and reused as 3 no. apartment units.

Brick Gate Lodge and Entrance Gate Lodge will be refurbished, adapted and reused as 1 no. apartment unit and to provide residential support facilities, respectively.

7.3.2.4 Education

There are a number of primary and secondary schools within 2km of the proposed development site:

- Scoil Lorcáin – 700m north west
- Carysfort National School – 1.7km west
- Guardian Angel National School – 840m west
- Newpark Comprehensive School – 1km west
- All Saints National School – 1.5 km west
- Saint Augustine's School – 1.6km west
- Saint Patrick Boys National School – 1.7km south west
- Rockford Manor Secondary School – 580m south
- Dun Laoghaire Educate Together National School – 570m south
- Holy Family School – 650m south
- Monkstown park Junior School – 630m east
- Saint Oliver Plunkett Special School – 320m east
- Dominican Primary School – 1.4km east

7.3.2.5 Health

The nearest hospital to the site is Saint Michael's Hospital located c. 1.4km to the east of the site.

7.3.2.6 Emergency Services

The Blackrock District Garda Station and Dun Laoghaire Fire Station are located c. 1.6 km north west and c. 1.2 km east of the site respectively.

7.3.2.7 Places of worship

There are several places of worship within a 1.5 km vicinity of the development, including:

- Saint John the Baptist
- Church of the Guardian Angels
- All Saint's Church
- RCCG King's Arena
- Saint John's Church and Prebytery
- Dún Laoghaire Presbyterian Church
- Saint Patrick's Church
- Church of Ireland Monkstown
- Saint Muichael's Church
- The Methodist Church
- Quaker Meeting House

7.3.2.8 Landscape Amenity and Tourism

As noted in the Chapter 13 (Landscape and Visual) of this EIAR, the site itself is that of Dalguise House, which is approximately 9 acres in size with the protected structure of Dalguise House located south-centrally within it amongst extensive gardens, lawns and mature trees. There is a small stream that passes through the northern portion of the site. The site is in the heart of Monkstown Valley which slightly lower lying than the lands that surround it. Most notably there is a small rise to the north in the direction of Monkstown Road, which runs along a low crest before the topography falls gently towards the sea at Seapoint Beach. Monkstown Road and the streets that link down to the Seapoint Avenue coastal road (Seafield Avenue, Albany Avenue and Brighton Avenue) consist of a range of large Victorian Era residences interspersed with residential properties for more recent times generally contained within substantial mature gardens. To the east and west of the site are the meandering cul-de-sacs of the 'Richmond Park' and 'The Beeches' respectively. These mainly consist of mid-low density terraced and semi-detached dwellings surrounding small communal green areas. There are also some modest apartment buildings contained within The Beeches. To the south, a line of generous proportioned detached houses from Brook Crescent back onto the wooded southern boundary of the site. The grounds of Stradbrook Rugby Club occupy much of the nearby land to the southwest.

In terms of landscape amenity, there are a number of protected structures listed on the Sites and Monuments Record (SMR) on or adjacent to the proposed development site including Dalguise House, Richmond Park House and Carrickbrennan House. There are also several protected trees on the proposed development site.

The site is historically the location of Dalguise House, still there today, as is indicated on the Historical Ordnance Survey (OS) maps. The land usage has not changed considerably over the past 200 years, however all surrounding land which was previously used for recreation (Ashton Park) and agriculture is now used for residential purposes.

The primary areas of landscape amenity in the immediate vicinity of the proposed development site are several small green areas, which have a DLRCC Use Class Zoning Objective F – '*to preserve and provide for open space with ancillary active recreational amenities'*, and South Dublin Bay proposed Natural Heritage Site to the north of the site.

The Proposed Development site is not considered to be significant or sensitive from a natural landscape aspect due to it being in a built-up location. The lands are appropriately zoned in the *Dún Laoghaire-Rathdown Development Plan 2022 – 2028* as Objective A – *'To provide residential development and improve residential amenity while protecting the existing residential amenities'.* The immediate surrounding area is contained within an environment of an established residential setting.

Tourism is a growing industry in the immediate environs of the proposed development site. Dún Laoghaire village and Seapoint Beach are the closest attraction for tourists in the vicinity. There is also only a small number of hotels close to the development with the closest being Haddington House Hotel in Dún Laoghaire (c. 2 km to the east of the site). Section 3.1.2.14 *Policy E14: Tourism and Recreation* of the *Dún Laoghaire-Rathdown Development Plan 2016-2022* is a policy which highlights the opportunities to promote and facilitate tourism in the region.

7.3.2.9 Natural Resources

Natural resources and land use in the hinterland of the Proposed Development have also been considered as they may have implications for the development of the lands.

Geological Heritage, and Economic Resources

Data from the Geological Survey of Ireland indicates that there are no areas of geological heritage within the vicinity of the proposed site. In terms of extractive industries, the closest active quarries are the Lecarrow Limestone Quarry (c. 8.1 km south west of the site) and the Murphystone Quarry and Factory (c. 8.3 km south west of the site) both in Barnacullia, Co. Dublin. There are no anticipated impacts on these facilities from the proposed development. Further detail on extractive industries is presented in Chapter 9 (Land, Soils, Geology and Hydrogeology).

Recreational Waters and Bathing Waterbodies

A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are two Recreational Waters or Bathing Waterbodies within the Study Area.

Seapoint Beach is located c. 340 m to the north of the proposed development site. Seapoint Beach is a Blue Flag for 2022 and it has a current bathing water classification of *excellent water quality.*

Sandycove Beach is located c. 2.9 km to the east of the proposed development site. Sandycove Beach is a Blue Flag for 2022 and it has a current bathing water classification of *excellent water quality.*

Chapter 10 (Hydrology) identifies that there is a direct hydrological pathway to Dublin Bay and Seapoint Beach via the Stradbrook Stream to the north of the proposed development site.

Drinking Water Resources

A review of Environmental Sensitivity Mapping and Geological Survey of Ireland online maps that includes the Water Abstraction locations, and Groundwater Source Protection Areas has been undertaken. This shows no Groundwater Source Protection Areas within the Study Area.

7.3.2.10 Risk of Major Accident Hazards or Disasters

The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive facilities. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required.

Landslides, Seismic Activity and Volcanic Activity

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity. Further detail is provided in Chapter 9 (Land, Soils, Geology and Hydrogeology).

Proximity to Seveso or Industrial Emissions Sites

The potential for major accidents to occur at the facility has also been considered with reference to establishments registered with the Health and Safety Authority in accordance with the Control of Major Accident Hazards (COMAH) Regulations that implements the implements the Seveso III Directive. The National Oil Reserves Agency Ltd site at Shellybanks Road, Ringsend, Dublin 4 is the closest notified Upper Tier Seveso site to the proposed development and is located 5.7 km north north-west of the site. The consultation distance for the National Oil Reserves Agency Ltd site is 300 m as listed within Appendix 8 of the *draft Dublin City Development Plan 2022 – 2028.*

There are no significant risks in relation to the proposed development and Major Accident Hazards. The site is not a Seveso facility and is not within the consultation distance of any Seveso facility.

Risk of Flooding

The potential risk of flooding on the site was also assessed. As stated in Section 10.3.2 and Section 10.4.2.2 of Chapter 10 (Hydrology), a Stage 3 Flood Risk Assessment was carried out by McCloy Consulting in 2021 for the proposed development site. The analysis shows that the majority of the site will not be affected by a 1 in 100 or 1% AEP (Annual Exceedance Probability) year storm event or a 1 in 1000 or 0.1% AEP year storm event and as such is located in Flood Zone C. Small areas to the north of the site lie within the 0.1% AEP floodplain of the Stradbrook Stream (Flood Zone B) and the 1% AEP floodplain (Flood Zone A) as defined in the Flood Risk Management Guidelines. This has been confirmed with the most recent OPW flooding maps (available on www.floodinfo.ie). The development design has taken this into account and the 'sequential approach' has been applied to the existing flood scenario at the site as follows (McCloy Consulting, 2021):

- Highly vulnerable development (residential) has been wholly located in Flood Zone C / outside the 0.1% AEP floodplain (with the exception of 6 m^2 of Block B). It is noted that Block B lies entirely outside the post-development 0.1% AEP floodplain.
- Less vulnerable development (access roads) has been located in Flood Zone C with the exception of the section crossing the watercourse to accommodate site access. It is noted that proposed levels of the watercourse crossing will ensure it lies outside / above the 0.1% AEP flood level.
- Less vulnerable development (car parking) has been site in Flood Zone C as much as possible ut sections in the north of the site are by necessity located in Flood Zone A / 1% AEP and Flood Zone B / 0.1% AEP. Finished levels in those areas are subsequently raised relative to adjacent flood levels and have a post-development probability of flooding equivalent to Flood Zone C.
- Open green space (non-amenity) areas are sited within Flood Zone A but are considered appropriate as such under the OPW guidelines.

Furthermore, the site-specific hydraulic modelling has shown that the proposed development will not have any off-site effect / increase in flood risk elsewhere.

7.4 Potential Impacts of the Proposed Project

The impact on Population and Human Health of construction and operation of the proposed development is considered below.

7.4.1 Construction Phase

7.4.1.1 Potential Impacts on Population

Business and Employment

It is predicted that there will be a ***slight, positive*** impact on local business activity during the construction phase with the increased presence of up to 800 no. construction workers using local facilities.

The potential increase in the temporary population of the area during construction as a result of the employment of workers from outside the wider Dublin area that may choose to reside in the immediate and wider local area is likely to amount to only a small percentage of the workforce employed during the construction phase but will result in some additional trade for local accommodation and services. It is expected that the majority of the work force will travel from existing places of residence to the construction site rather than reside in the immediate environs of the site. However, some local employment from within the wider local area is expected.

Construction will have an ***indirect, positive*** effect on support industries such as builder suppliers, construction material manufacture, maintenance contracts, equipment supply, landscaping and other local services which may benefit businesses within or outside the study area. There will also be a need to bring in specialist workers on a regular basis that may increase the above estimated working population at times. Specialists are only likely to stay for shorter periods depending on the nature of the work.

The construction phase, therefore, is considered to have the potential to have a ***slight, short term*** *and* ***positive*** impact on the economy and employment of the local and wider area.

Local Amenities, Cultural Heritage and Tourism

There are a number of protected trees and structures listed on the Sites and Monuments Record (SMR) on or adjacent to the development site. In particular, Dalguise House is located on the development site and will be retained. Dalguise House and the protected trees on the proposed development site, along with the adjacent protected buildings, will be protected and aside from demolition works stated in the Chapter 5 (Description of Proposed Development), these structures will not be impacted by the proposed construction works.

There will be permanent physical effects to the land cover of the site, which are not readily reversible following the construction stage.

No construction impacts are predicted upon specific cultural heritage sites or areas.

There is a direct hydrological pathway to Dublin Bay and Seapoint Beach via the Stradbrook Stream to the north of the proposed development site. During the construction phase possible impacts to the water quality at these amenities could occur due to sedimentation, spillage of hydrocarbons and other chemicals, spillage of cementitious materials and inadequate treatment of wastewater. As detailed in Chapter 10 (Hydrology), there is up to a ***moderate*** risk of a ***temporary*** impact without mitigation on Stradbrook stream. It is also noted, there is ***no possible impact*** on water quality status in Dublin Bay due to low contaminant loading and attenuation and dilution near source area.

As detailed in Table 10-3 of Chapter 10 (Hydrology), in the absence of mitigation, water quality impacts on the Stradbrook Stream which could arise in the event of accidental pollution from the proposed development could constitute short-term, significant and negative impact at the local level. Pollutants entering the Stradbrook Stream have the potential to lead to short-term and permanent***,*** moderate impacts at Nationally, European and Internationally Designated sites. This would include an impact on Seapoint beach.

It is expected in the absence of specific mitigation measures, there is potential for ***negative, significant*** and ***short-term and permanent*** impacts at Seapoint Beach.

Material Assets

The Proposed Development will require electrical power supply from the national grid and the requirements for this supply have been detailed in Chapter 19 (Material Assets – Built Services) of this EIA Report. The wider area is served by a 10kV and 400 Volt Network, with the site currently supplied with a low voltage connection from the Monkstown Road. A High Voltage Line is located on the near carriage of the Monkstown Road, connecting High Voltage stations across South Dublin.

There is currently minor dry infrastructure servicing the development-site, which served the existing buildings that are to be decommissioned and removed from site. This includes, but is not limited to, service ducting, ESB infrastructure, Gas and Telecoms infrastructure such as pipes, ducts, manholes and chambers.

There is currently minor wet infrastructure servicing the development-site, which served the existing buildings that are to be decommissioned and removed from site. This includes, but is not limited to, service ducting, water main and wastewater infrastructure such as pipes, ducts, manholes and chambers.

The new development is likely to require new connections to all service providers as well as to public water supply and wastewater networks which, although unlikely, may result in temporary disruption of existing services in the vicinity of the development; in order to facilitate the connection but this disruption, if any, will be brief and not significant. Therefore, there is no likelihood of significant effects as a result of the proposed development.

The Proposed Development will create a wastewater discharge which will be treated offsite at Ringsend WWTP in accordance with Irish Water requirements, and will not have an impact on local amenities or the local population (Chapter 19, Material Assets – Built Services). However, as detailed in Chapter 10 (Hydrology), during periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system.

As detailed in Chapter 9 (Land, Soils, Geology and Hydrogeology) of this EIAR, there is no evidence of a significant soil hazard on site. No groundwater ingress was observed to the bored depths. However, water was present in the boreholes at the end of the drilling. Due to the relatively high water table, it is expected during the excavation works that localised dewatering works will be required. There is also a minor risk associated with the possibility of encountering contaminated soils during the de-commissioning and removal of the existing septic tank on site. The following activities have the potential to effect soil, geology and hydrogeology on the proposed development site during the construction phase:

- Import of Contaminated Soils, Aggregates & Materials
- Encountering Existing Contamination
- Accidental Spills and Leaks
- Excavation, Loss of Soils and Bedrock Exposure
- Soil Compaction
- Dewatering

It is expected in the absence of specific mitigation measures, that these activities have the potential for ***imperceptible - slight*** impacts on soils, geology and hydrogeology.

Additional Traffic

An assessment of the additional traffic movements associated with the Proposed Development during the construction phase is presented in Chapter 17 (Material Assets – Roads & Traffic). Vehicular movements carrying construction personnel can be broken down as follows:

- 800 peak staff working on site (Max)
- 40% arrive during AM or PM Peak Hours 320
- 30% arrive via public transport, walk or cycle 96
- Total arrive via car/van 224
- Average Car Occupancy = 2.2 (including driver)

- Maximum additional movements AM/PM Peak (800 staff) 102 cars/vans
- With up to 400 staff normally on site
- Normal additional movements AM Peak 51 cars/vans

This volume of construction traffic estimated to be generated during peak traffic hours is lower than the peak volumes of non-construction traffic projected for the operational phase of the development. Beyond the bulk earthworks stage, other stages during construction are estimated to have lower HGV volumes and lower traffic volumes overall. The projected peak volume of construction traffic, including both truck and staff movements, is lower than the peak traffic volumes projected for the fully occupied development during the operational stage. Therefore, in Traffic Impact Assessment terms, the most onerous scenario to assess in terms of capacity and traffic impact is the operational stage of the development.

It expected that there will be a ***slight-moderate, short-term*** impact on population with regards to additional traffic during the construction stage of the proposed development

7.4.1.2 Potential Impacts on Human Health

The main potential impacts on human health associated with the proposed development will be in relation to air quality, noise, traffic and visual impact. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIA Report as follows:

Chapter 11 – Air Quality and Climate;
Chapter 12 – Noise and Vibration;
Chapter 13 –Landscape and Visual; and
Chapter 17 – Material Assets – Road & Traffic.

Air Quality

As outlined in Chapter 11 of this EIA Report (Air Quality and Climate), National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are based on the protection of the environment as well as the protection of human health. Additional factors such as natural background levels, environmental conditions and socio-economic factors are also considered in the limit values which are set out below in Table 7.10. The ambient air quality standards established are designed to minimise harmful effects to health.

Table 7.11 Ambient Air Quality Standards (As taken from Chapter 11, Table 11.1)

Pollutant	Regulation [Note 1]	Limit Type	Value
Nitrogen Dioxide (NO_2)	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
		Critical level for protection of vegetation	30 µg/m^3 NO + NO_2
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
		Annual limit for protection of human health	40 µg/m^3

Pollutant	Regulation [Note 1]	Limit Type	Value
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health	25 µg/m³

[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

As part of the implementation of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2021a). Dublin is defined as Zone A. Long-term NO_2 monitoring was carried out at the Zone A suburban locations of Rathmines, Ballyfermot, Dún Laoghaire and Swords for the period 2015 – 2019 (EPA, 2021a). Long-term average concentrations are significantly below the annual average limit of 40 µg/m³ for the suburban locations. Average results range from 13 – 22 µg/m³. The NO_2 annual average for this five year period suggests an upper average limit of no more than 22 µg/m³) as a background concentration for the suburban locations. The monitoring site in Dún Laoghaire is approximately 1 km south-east of the proposed development and concentrations would be representative of the location. Concentrations of NO_2 at the Dún Laoghaire site ranged from 15 – 19 µg/m³ over the period 2015 – 2019. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the proposed development is 19 µg/m³.

Dust emissions from the construction phase of the proposed development have the potential to impact human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Table 7.11 below, PM_{10} emissions can occur within 50 m of the site for a development of a moderate scale. There are a number of high sensitivity receptors bordering the site, a number of which are within 15 m of the site boundary.

Table7.12 Assessment Criteria for the Impact of Dust Emissions from Construction Activities with Standard Mitigation in Place (As taken from Chapter 11, Table 11.5)

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large construction sites with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites with limited use of haul routes	25m	10m	10m

Source: Appendix 8: Assessment of Construction Impacts taken from "*Guidelines for the treatment of Air Quality During the Planning & Construction of National Road Schemes*" (TII, 2011)

Continuous PM_{10} monitoring was carried out at the Zone A locations of Rathmines, Dún Laoghaire, Ballyfermot and Phoenix Park from 2015 – 2019. These showed an upper average limit of no more than 15 µg/m³. Levels range from 9 – 16 µg/m³ over the five year period, with, at most, 9 exceedances of the 24-hour limit value of 50 µg/m³ in Rathmines in 2019 (35 exceedances are permitted per year). Sufficient data is available for the Dún Laoghaire station to observe long-term trends in the data, which suggest an upper average annual mean value of at most 13 µg/m³ as a background concentration. Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the proposed development is 16 µg/m³.

Monitoring of both PM_{10} and $PM_{2.5}$ takes place at the station in Rathmines which allows for the $PM_{2.5}/PM_{10}$ ratio to be calculated. Average $PM_{2.5}$ levels in Rathmines over the period 2015 – 2019 ranged from 9 – 10 µg/m^3, with a $PM_{2.5}/PM_{10}$ ratio ranging from 0.60 – 0.68 (EPA, 2021a). Based on this information, a conservative ratio of 0.7 was used to generate an existing $PM_{2.5}$ concentration in the region of the proposed development of 11.2 µg/m^3.

Therefore, given the proximity of the closest sensitive receptors and current air quality conditions, in the absence of mitigation there is the potential for ***slight, direct, negative, short-term*** impacts to human health as a result of air quality deterioration during the construction phase of the Proposed Development.

Noise and Vibration

Noise and vibration impacts associated with the Proposed Development have been fully considered within Chapter 12 (Noise and Vibration) of this EIA Report. Commentary on the impact assessment and related noise levels are summarised below with respect to potential human health impacts.

Construction Phase

Construction noise thresholds are set out in Section 12.4.1 of Chapter 12 (Noise and Vibration) of the EIAR. The threshold values are set in accordance with British Standard BS 5228–1 (BSI 2014) which is the most widely accepted standard for this purpose in Ireland. The threshold values take account of the prevailing ambient noise environment (Discussed in Section 12.3.5, Table 12.1) and allow for a proportional increase in noise during the construction phase depending on the noise category in which a noise sensitive location is defined within (low, medium or high). Significant noise effects are thereby controlled through identifying noise threshold values for construction activities to work within. These thresholds relate to human response to noise. A short term elevated noise level or identified potential significant noise impact does not, however, equate to the same effect in terms of human health.

With reference to Table 12.45 in Chapter 12, while works are taking place close to the site boundary at distances of 15-30m from noise sensitive locations, in the absence of mitigation there is the potential for ***negative, significant to very significant*** and ***temporary*** noise impacts as a result of the construction phase of the Proposed Development. At sensitive locations at distances of 60m and greater from construction works, in the absence of mitigation there is the potential for ***negative, moderate*** and ***short term*** noise impacts as a result of the construction phase of the Proposed Development. Noise impacts associated with the construction phase will be temporary to short-term in duration and therefore any elevated levels of noise will be of limited duration and, as a result, associated impacts or risks to human health are ***not significant***.

As detailed in Chapter 12 (Noise and Vibration), all construction related vehicles accessing and egressing the site will do so from the specified access road off Monkstown Road. The assessment has determined, no significant increase in traffic noise levels will occur during the construction phase based on a worst case analysis of traffic volumes onto the surrounding road network. There are no human health effects associated with any construction traffic noise. The resultant impact is ***not significant***.

Vibration magnitudes during the construction phase will be orders of magnitude below those associated with any adverse human response due to the low levels of vibration associated with the construction plant and machinery used on site, therefore ***no significant impacts*** will occur. There are no human health impacts associated with construction vibration at any sensitive receptors. The resultant impact is ***not significant***.In terms of the noise exposure of construction workers and potential hearing damage that may be caused due to exposure to high levels of noise, the Safety, Health and Welfare at Work (General Application) Regulations 2007 (Statutory Instrument No. 299 of 2007) provides guidance in terms of allowable workplace noise exposure levels for employees. The Regulations specify two noise Action Levels at which the employer is legally obliged to reduce the risk of exposure to noise. The appointed contractor will be required to comply with the Regulations and provide appropriate noise exposure mitigation measures where necessary.

Major Accident Hazards and/or Natural Disasters

The Proposed Development has the potential for an impact on the health and safety of workers employed on the site, particularly during the construction phase. The activities of contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) as amended to minimise the likelihood of any impacts on worker's health and safety. The health and safety planning for the construction phase of the Proposed Development will consider any appropriate measures to safeguard workers' health and safety with regards to COVID-19.

The site has been assessed in relation to the following external natural disasters: landslides, seismic activity, volcanic activity and sea level rise/flooding as outlined below.

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity. The Proposed Development site is not located within the consultation distance of any COMAH establishment that is notified to the Health and Safety Authority (HSA).

There is a potential impact on the receiving environment as a result of minor accidents/leaks of fuel/oils during the construction phases. However, the implementation of the mitigation measures set out in Chapter 9 (Land, Soils, Geology and Hydrogeology) and Chapter 10 (Hydrology) of the EIA Report will ensure the risk of a minor/accident is low and that the residual effect on the environment is ***imperceptible***.

Visual Alteration

During the construction stage of the proposed development, there will be intense construction-related activity within and around the site, including approach roads. This will include, but is not limited to:

- HGVs transporting materials to and from the site;
- Movement of heavy earth-moving machinery and the erection of several tall tower cranes on-site;
- Temporary storage of excavated materials and construction materials on-site;
- Gradual emergence of the three proposed blocks, and associated works;

- Security fencing and site lighting.

It is expected the magnitude of construction stage landscape/townscape impacts will be ***negative, moderate*** and ***short-term*** at the closest receptors.

7.4.2 Operational Stage

7.4.2.1 Potential Impacts on Population

Housing Supply

Action 2.10 of *Healthy Ireland – A Framework for Improved Health and Wellbeing 2013-2025* aims to:

> *"Forge proactive partnerships at the national and local level to activate the role of the private sector in addressing the broader determinants of health and wellbeing and improving the health of the population. Models of private sector involvement will be developed to assist national and local authorities, local communities and others in maximising the positive involvement of businesses in supporting healthy people, families, towns, cities and counties."*

The Proposed Development can be viewed as the activation of the private sector to provide the population with a requirement, i.e. housing, which will have an effect on wellbeing of the wider population.

The Proposed Development will significantly reduce the pressure on local housing supply, while providing high quality housing which will have a ***slight, positive, long-term*** impact on the wellbeing of the wider population, outside of the study area, wishing to move into the area.

Business and Employment

There will be a ***moderate, positive, long-term*** impact on local businesses during the operational phase due to the residential nature of the scheme and the increase in people requiring the use of facilities in Monkstown and surrounding areas.

The Proposed Development will consist of residential units, along with a crèche unit in Block A and a café/restaurant in Dalguise House which will provide employment opportunities which will be of direct benefit, allowing members of community to work, and live within the Dún Laoghaire-Rathdown area .

Therefore, the Proposed Development will result in a ***slight, positive, long-term*** impact to local population in the area.

Local Amenities, Cultural Heritage and Tourism

The Proposed Development will consist of residential units, along with a crèche unit in Block A and a café/restaurant in Dalguise House, along with enhanced cycling facilities and pedestrian permeability (subject to permission from DLRCC) will have a ***slight*** and ***positive*** impact on the local population with regards to the availability of local amenities.

As outlined in Chapter 10 (Hydrology), the reduction in water quality in the Stradbrook Stream is considered to constitute a ***permanent moderate*** impact at the local level. Pollutants entering the Stradbrook Stream have the potential to lead to ***negative, moderate, short-term and permanent*** impacts at Nationally, European and Internationally Designated sites.

Material Assets

As detailed in Chapter 19 (Material Assets – Site Services) the Proposed Development will require power supply, gas, telecommunications, fresh water and foul infrastructure and storm and surface water assets. It is intended that the national grid will supply power to site.

The new development will lead to an increase in the demand on the local power supply network. However, ESB Networks continually upgrade and extend their networks to meet demand, and a new Medium Voltage supply will be taken into the site from the Monkstown Road to independently supply the site. As such there will be ***imperceptible*** and ***long-term*** impact on power supply to local residential or business users, who may be reliant upon these.

The new development will lead to an increase in the demand on the local gas supply network. However, Bord Gais continually upgrade and extend their networks to meet demand, and a new low pressure supply will be taken into the site from the Monkstown Road, to independently supply the site. In addition, it is not proposed to supply gas services to any residential unit, therefore the impact could be deemed ***imperceptible***. As such there, will be ***imperceptible*** and ***long-term*** impact on gas services supply to local residential or business users, who may be reliant upon these.

The new development will lead to an increase in the demand on the local Telecoms supply network, however both Eir and Virgin Media continually upgrade and extend their networks to meet demand, and new Fibre-to-the-Home supplies will be extended to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements. The impact to the population could therefore be deemed ***imperceptible*** and ***long-term***.

As discussed in Chapter 19 (Material Assets – Built Services), the implementation of 'SuDs' across the development will provide an effective system separate from the foul network to mitigate the adverse effects of storm water run-off on the environment, through enhanced quality systems and on local infrastructure to aid in preventing downstream flooding. The features proposed shall reduce runoff volumes, pollution concentrations and enhance groundwater recharge and biodiversity. The impact is therefore considered to be ***positive***.

As discussed in Chapter 19 (Material Assets – Built Services), basement and undercroft car parking areas on site will discharge to the foul system via a petrol interceptor to prevent pollution from accidental oil spills. This would again be considered a ***positive*** impact.

Basement and undercroft car parking areas on site will discharge to the foul system via a petrol interceptor to prevent pollution from accidental oil spills. This will ensure there is ***no impact*** on the local population.

The development will result in an increase in the wastewater discharged from the site to the public sewer system. The foul outflow from the site will be directed to the municipal treatment plant at Ringsend. Upgrade works are needed as the plant is not currently meeting

its requirements under the Urban Wastewater Treatment Directive and increased outflow from development such as the proposed development will increase loading on the Ringsend WWTP. However, planning permission has recently been granted, under Bord Order ABP-301798-18 for an expansion to the Waste Water Treatment Plant at Ringsend which will increase network capacity by 50%. Irish Water have also confirmed feasibility for connection of the proposed development to the existing public sewer system subject to controlled flow provisions on the new development. Therefore, any impact on the local population from the increased wastewater flows on the existing drainage network will be ***temporary*** and ***not significant***.

The new development will lead to an increase in the water supply demand on the public water supply network, however Irish Water has confirmed that there is capacity in the system to take additional demand. The impact is therefore ***imperceptible*** and ***long-term*** on the local population.

Additional Traffic

As detailed in Chapter 17 (Material Assets – Roads & Traffic), traffic impacts of less than 5% are defined as having a slight traffic impact. Traffic increased of 5% to 10% are defined as moderate traffic impact, which traffic greater that 10% increase defined as a significant traffic impact. The AADT of Monkstown Road in the Base Year (2022) has been calculated having regard to Unit 16.1 of the TII Project Appraisal Guidelines for National Roads, October 2016 as 13,500. This will increase to 14,000 by the Opening Year as a result of other developments in the area.

The TIA has calculated that the additional annual average daily traffic (AADT) associated with the operational stage of the proposed development is 1,350. This is equal to 9.6% of the Opening Year AADT and 8.9% of the Design Year AADT. The likely impact of the proposed development during the operational phase on the surrounding population will therefore be ***negative, moderate*** and ***long-term*** in the immediate vicinity of the proposed development on Monkstown Road. This impact will dissipate on the wider road network, reducing with distance from the site.

7.4.2.2 Potential Impacts on Human Health

Air Quality

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 7.1. Concentrations of PM_{10} were modelled for the baseline year of 2022 in Chapter 11, Section 11.4.2.1 of this EIAR. The modelling showed that concentrations were in compliance with the annual limit value of 40 µg/m^3, therefore, further modelling for the opening and design years was not required. Concentrations reached at most 0.84 µg/m^3. When a background concentration of 16 µg/m^3 is included, the overall impact is 42% of the annual limit value at the worst case receptor.

Air dispersion modelling of traffic emissions (carried out using the UK DMRB mod–l - see Chapter 11, Section 11.6.2.1) has shown that levels of all pollutants are below the ambient air quality standards set for the protection of human health. It can be determined that the impact to human health during the operational stage is ***long-term, negative*** and ***imperceptible.***

Noise and Vibration

As detailed in Chapter 12 Noise and Vibration, 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, the childcare facility (crèche), mechanical and electrical plant used to service the buildings.

There are no sources of vibration associated with the operational phase of the proposed development.

The nature of on-site sources are comparable to other similar activities in the surrounding area which form part of the ambient noise environment. The noise limits at the nearest noise sensitive locations are set in line with the best practice guidance in order to control any adverse impacts on people. In addition, operational noise limits also align with those set by the WHO *Guidelines for Community Noise (WHO 1999)* document in order to avoid any daytime annoyance or speech interference. Taking the above into consideration, operational noise levels associated with the development will be well below any level that has the capacity to cause any risk of long-term exposure to noise on human health.

There are therefore no health risks associated with operational noise or vibration resulting from the development. The overall impact is ***neutral to not significant.***

Major Accident Hazards and/or Natural Disasters

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity. The Proposed Development site is not located within the consultation distance of any COMAH establishment that is notified to the HSA.

The potential risk of flooding on the site was also assessed. A site-specific flood risk assessment (FRA) was carried out by the project engineers, McCloy Consulting and it was concluded that there is a low risk of coastal, fluvial, pluvial, ground water and public sewer flooding. The FRA will be included with the documents submitted as part of the planning application.

There is a potential impact on the receiving environment as a result of leaks of fuel/oils from vehicles during the operational phases. However, as there is no bulk fuel store don site during operation, no mitigation is required. The implementation of the mitigation measures set out in Chapter 9 (Land, Soils, Geology and Hydrogeology) and Chapter 10 (Hydrology) of the EIA Report will ensure the risk of a minor accidents / floodings / landslides is low and that the residual effect on the environment is ***imperceptible*** and ***long-term***.

Visual Alteration

Following the completion of the proposed works the former parkland setting of Dalguise House and gardens will be permanently transformed and occupied by nine apartment blocks, gate lodges, parking buildings / areas, vehicle and pedestrian circulation routes as well as intensive landscaped areas. The most notable landscape/townscape impacts of the proposed development will result from the permanent presence of eleven apartment buildings ranging in height from 9 storeys near the centre of the site, 6, 7 and 4 storeys along the eastern and

western sides, down to 3 storeys at the southern end of the site where they abut the rear gardens of lower rise / density residential housing.

In this regard, there will be a legible transition of scale from the central to peripheral portions of the site as required by the Building Height Guidelines. Surrounding residences will be further buffered and absorbed by the retention of much of the boundary wooded areas and mature trees. This is evidenced by the photomontage set, which illustrates that only the nearest apartment blocks, and occasional the taller central Block E, rise just above or between sections of dense intervening vegetation even when viewed from relatively close by. The terrain of the site, being within the comparatively low lying ground of Monkstown Valley also serves to deemphasise the height of the proposed apartment blocks when seen from beyond the site particularly to the north, south and west. Notably from Monkstown Road and the core of Monkstown Village, the development is barely discernible, if visible at all. Consequently, there will be little effect on the critical character of the Monkstown Architectural Conservation Area and the sensitive coastal corridor.

It is expected the magnitude of operational stage landscape/townscape impacts will be ***negative-neutral, moderate-slight*** and ***long-term*** at the closest receptors.

7.5 Mitigation Measures

7.5.1 Construction Stage

The mitigation measures to address the potential impacts on population and human health from the construction stage of the proposed development have been assessed within the corresponding specialist chapters; Chapter 9 (Land, Soils, Geology and Hydrogeology); Chapter 10 (Hydrology); Chapter 11 (Air Quality and Climate), Chapter 12 (Noise and Vibration); Chapter 13 (Landscape and Visual); and Chapter 17 (Material Assets – Roads and Traffic).As the construction stage is expected to have a positive impact on businesses and employment in the local area, no mitigation is required.

P_1: To ensure there is no impact on Seapoint Beach (local amenity), all works in proximity to the Stradbrook Stream will follow best practice guidance, as per the following documents:

- Guidelines for the crossing of Watercourses During Construction of National Road Schemes (TII, 2008).
- Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (IFI, 2016).
- C532 Control of water pollution from construction sites: guidance for consultants and contractors (CIRIA, 2001).

P_2: To ensure there is no impact on Seapoint Beach (local amenity), as per the project specific Construction Management Plan:

Prior to commencement on site, as part of the overall Construction Management Plan for the works detailed meetings will be conducted between the relevant members of the appointed Design team, the Main Contractor for the project and DLRCC so that site parameters can be agreed regarding the protection of the Stradbrook Stream for construction spillages including soil run off, silts and general pollutants resulting from construction activities.

The "Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters" 2016 produced by Inland Fisheries Ireland must be used as a baseline publication in the protection of the Stradbrook Stream and surrounds and the detailed recommendations contained within should be adhered to where applicable.

Pre-construction, the Contractor must establish, with the assistance of an approved testing consultant, a series of recommended baseline levels in the stream such as existing pollution levels, water quality etc, During the construction works, continuous monitoring must be carried out to confirm that established water quality levels have not dropped below specified/agreed levels set in conjunction with the OPW/ Inland Fisheries and the Local Authority.

The existing Irish Water/ DLRCC main foul line running adjacent to the Stradbrook Stream must be protected at all times from excessive discharge. Agreement 26 regarding such discharges, if permitted, will be confirmed with the relevant Statutory bodies prior to commencement on site.

The requirements of the DLRCC document "Special Requirements for the protection of Water Quality in the Management of Civil Engineering Contacts" must be adhered to during the construction phase of the development particularly in proximity to the Stradbrook Stream, subject to agreed adjustments, where permissible, with the Local Authority.

Some baseline considerations to be taken during the proposed works are:

- Double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential silt or sediment run-off
- Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse ,in order to minimize sources of sediment runoff.
- Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations.
- In order to limit the potential for pollution due to run-off from construction, all run off waters must be directed through sedimentation ponds prior to discharge. These ponds must be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to pond and suspended solids are allowed to settle

P_3: A Traffic Management Plan will be prepared by the contractor and agreed with Dún Laoghaire Rathdown County Council's Transportation Department and An Garda Siochana, to mitigate any impact of construction on the surrounding road network and hence the local population.

P_4: In order to mitigate the potential dust-related health impacts during the construction phase, a dust minimisation plan will be formulated. This plan will draw upon best practice mitigation measures from Ireland, the UK and the USA to ensure the highest level of mitigation possible.

P_5: With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*. Whilst construction noise and vibration impacts are expected to vary during the construction phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site NSLs are minimised.

The best practice measures set out in BS 5228-1 and BS 5228-2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant;
- noise control at source;
- screening; and,
- liaison with the public.

Construction activities will vary depending on the phase of construction.

7.5.2 Operational Stage

The mitigation measures to address the potential impacts on population and human health from the operational stage of the proposed development have been assessed within the corresponding specialist chapters; Chapter 9 (Land, Soils, Geology and Hydrogeology); Chapter 10 (Hydrology); Chapter 11 (Air Quality and Climate), Chapter 12 (Noise and Vibration); Chapter 13 (Landscape and Visual); and Chapter 17 (Material Assets – Roads and Traffic).

With reference to Chapter 13 (Landscape and Visual), it is not considered necessary to introduce specific Townscape and Visual mitigation measures as the main siting, design and landscaping measures are all deemed appropriate and are integral to the design of the development as already assessed.

P_6: As detailed in Chapter 9 (Land, Soils, Geology and Hydrogeology) of this EIAR, appropriate waste management practises will be implemented to avoid leaks/spills/runoff/accidental release or escape of fuels, oils and lubricants, bulk liquid cement, contaminated leachate into the ground, and hence avoid impacts to the Stradbrook Stream which may result in impacts to Seapoint Beach (local amenity).

P_7: As detailed in Chapter 10 (Hydrology) of this EIAR, mitigation measures include a surface water drainage system for rainwater from the roofs and roads which will consist of a petrol interceptor, ponds, swales, rain gardens and attenuation tanks, prior to discharge to the Stradbrook Stream. All foul water will be pumped to Ringsend WWTP for treatment. As previously mentioned, during high rainfall, overflows of foul water occur at Seapoint pumping station Maintenance of the Stradbrook Stream will be undertaken to ensure flow is maintained and risk of flooding is not increased by removing blockages and routine clearing.

P_8: The proposed development will implement SuDS measures across the development in compliance with the requirements of the Greater Dublin Strategic Drainage Study reducing runoff volumes, pollution concentration and enhancing groundwater recharge, and therefore will have a positive impact on the catchment, and contribute to avoiding impacts to the Stradbrook Stream which may result in impacts to Seapoint Beach (local amenity).

P_9: Best practice guidance details an assessment methodology to derive appropriate noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the effect of plant noise is acceptable. To achieve these noise limits consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques.

7.6 Residual Impacts

The impacts on the local population in terms of residents and businesses are considered to be mainly positive in the sense of creating direct employment opportunities and indirect additional business, both during the construction and operational phases. The impact on the wider population in terms of housing supply is considered to be a positive impact with regards to effect on wellbeing.

7.6.1 Construction Stage

7.6.1.1 Residual Impacts on Population

Business and Employment

Taking into account the mitigation measures outlined in Section 7.5.1 it is predicted that there will be no likely significant effect with regard to the construction phase on business and employment.

Local Amenities, Cultural Heritage and Tourism

It is predicted that there will be no potential impacts on Cultural Heritage and Tourism, therefore there are no residual impacts during the construction phase of the Proposed Development.

Taking into account the mitigation measures outlined in Section 7.5.1 and Chapters 9 and 10 of this EIAR and adherence to the CEMP it is predicted that there will be no likely significant effect with regard to the construction phase on the Stradbrook Stream which may result in impacts to Seapoint Beach (local amenity).

Material Assets

Residual impacts on the built services during the construction phase are considered to be ***temporary*** in nature and ***not significant***, where service is unavoidably disrupted to facilitate the construction phase.

Additional Traffic

Traffic movements during the construction phase have been assessed in the Transport Impact Assessment Report submitted as part of this planning application and discussed in Chapter 17 of this EIAR (Material Assets – Roads and Traffic). It has been deemed that there will be a ***temporary, negative*** and ***slight*** impact on population during the construction stage, however there are no likely significant effects predicted to occur.

7.6.1.2 Residual Impacts on Human Health

Air Quality

The greatest residual impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust. Taking into account the dust management plan will be followed along with additional mitigation measures in Section 11.5.1 of Chapter 11, there will be no residual impact to human health arising from air quality impact.

Noise and Vibration

Taking into account the best practice control measures for noise and vibration for construction sites and mitigation measures and design recommendations outlined in Section 12.5.1 of Chapter 12 of this EIAR, there will be a ***negative, moderate- significant*** and ***short term*** noise impact at the nearest sensitive receptors during the construction phase.

As the noise impacts associated with the construction phase will be temporary to ***short-term*** in duration and any elevated levels of noise will be of limited duration, the resultant impact to human health is ***not significant***.

Major Accident Hazards and/or Natural Disasters

Due to the site location, there is no significant risk from Unplanned Events/Impacts on Health and Safety, and therefore no likely significant effect arising from the predicted residual impacts with regard to the construction phase for unplanned events and human health and safety.

7.6.2 Operational Stage

7.6.2.1 Residual Impacts on Population

Businesses and Residences

Taking into account the mitigation measures outlined in Section 7.5.2 the predicted residual impacts with regard to the operational phase on business and residences is concluded to be ***positive*** and ***significant.***

Local Amenities, Cultural Heritage and Tourism

It is predicted that there will be no potential impacts on local Amenities and Tourism, therefore there are no residual impacts during the operational phase of the Proposed Development on Local Amenities and Tourism.

Material Assets

Residual impacts on the built services during the operational phase given the new infrastructure and upgrades to the existing networks are considered to be ***permanent*** with a constant occurrence, ***positive*** and beneficial to all the end users

Visual Impact

The nearest apartment blocks, and occasionally the taller central Block E, rise just above or between sections of dense intervening vegetation.

Taking into account the conclusions of the Townscape and Visual Impact Assessment and Chapter 13 (Landscape and Visual), there will be no residual significant and negative effects that could impact on human health arising from visual impact.

Additional Traffic

Taking into account the conclusions of the Transport Impact Assessment Report and Chapter 17 (Material Assets – Roads and Traffic), there will be a moderate increase in the use of the immediately adjacent road network by private vehicles. This will dissipate with distance from the site

The impact of the development during the operational phase will be ***permanent, negative*** and ***slight*** on the surrounding population arising from additional traffic.

7.6.2.2 Residual Impacts on Human Health

Air Quality

It is predicted that there will be no likely significant effect of the residual impact of air quality on Human Health.

Noise & Vibration

Taking into account the mitigation measures and design recommendations outlined in section 12.5.2 of Chapter 12 of this EIAR, there will be no residual impact to human health arising from noise and vibration.

Major Accident Hazards and/or Natural Disasters

There is no significant risk from *Major Accident Hazards or Natural Disasters* on Health and Safety, and therefore no likely significant effect arising from the predicted residual impacts with regard to the operational phase for unplanned events and human health and safety.

7.6.3 Worst Case Effect

In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase and contribute to additional impacts to human health and impacts to the population in the study area in terms of traffic, dust, and noise.

The implementation of mitigation measures within each chapter and detailed in Section 7.5; as well as the compliance of adjacent development with their respective planning permissions, will ensure there will be minimal residual impacts on human health and on the population within the study area during the construction phase of the proposed development.

7.7 Monitoring

7.7.1 Construction Stage

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

Noise and Vibration

The contractor will be required to ensure construction activities operate within the noise and vibration limits set out within this assessment. The contractor will be required to undertake regular noise and vibration monitoring at locations representative of the closest sensitive locations to ensure the relevant criteria are not exceeded.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.*

Vibration monitoring should be conducted in accordance with BS 6472:2008 *Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting* (human disturbance) and BS ISO 4866:2010 *Mechanical vibration and shock. Vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures* (building damage).

Air Quality

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development will take place to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days).

Land, Soils, Geology and Hydrogeology

Visual monitoring will be undertaken during the construction by a Health, Safety & Environmental Officer to determine compliance with the suggested mitigation measures described in Chapter 9, Section 9.5. Further, site records will be inspected to determine history of any contamination / spillages and how these were addressed. Improvements and lessons learnt may be a useful tool to ensure effectiveness.

Hydrology

IGSL have been engaged to monitor the groundwater level at the standpipes on a monthly basis until construction commences. During the site investigation, the water table level was observed above the basement level. Monitoring is required to refine which areas will require anti-floatation anchors, foundation design, treatment of temporary excavations, perimeter temporary piling design etc.

Visual monitoring will be undertaken during the construction by a Health, Safety & Environmental Officer to determine compliance with the suggested mitigation measures described in Section 10.5. Further, site records will be inspected to determine history of any contamination / spillages and how these were addressed. Improvements and lessons learnt may be a useful tool to ensure effectiveness.

Dedicated water quality monitoring of the Stradbrook Stream may be requested by EPA during the construction phase, to determine impact across the entire construction phase. This should be undertaken by a qualified environmental officer/manager with results reviewed by an independent Environmental Consultant, as required, and compared to relevant guidelines.

7.7.2 Operational Stage

With regards to vibration, noise and dust, no additional monitoring is required during the operational phase of the proposed development due to the impacts of these are predicted to be imperceptible.

With regards to land and soil protection, a regular maintenance regime should be implemented by the developer to ensure that all environmental protection measures are maintained, including all petrol interceptors in the car parking areas, and all infrastructure is kept in good working condition.

With regards to surface water and drainage networks, A regular maintenance regime should be implemented by the developer to ensure that all environmental protection measures are maintained at the development, that all infrastructure is kept in good working condition, and that the surface water and drainage networks are tended to as appropriate to avoid flood risk.

7.8 Reinstatement

No reinstatement works have been proposed as part of the development.

7.9 Interactions

With respect to the proposed development, impacts on human health and population occur exclusively through interactions with other aspects of the environment which have been discussed in the relevant specialist chapters:

- Chapter 9 (Land, Soils, Geology and Hydrogeology);
- Chapter 10 (Hydrology);
- Chapter 11 (Air Quality and Climate),
- Chapter 12 (Noise and Vibration);
- Chapter 13 (Landscape and Visual); and
- Chapter 17 (Material Assets – Roads and Traffic).

7.10 Cumulative Impact

There is a possibility that multiple developments in the area could run concurrently or overlap in the construction phase and contribute to additional impacts in terms of traffic, dust and noise.

Chapter 3, Section 3.7 has outlined the surrounding, both committed (permitted/under construction) and planned projects, which are being considered as part of the cumulative impact of the proposed development in relation to population and human health.

However, the mitigation measures highlighted above and included in the individual chapters of this EIAR along with the fact that any other significant construction project in the area would require an EIAR and consideration of the same/ similar mitigation measures would reduce the cumulative impact to receptors in the area. The construction phase of the proposed development together with any/all relevant other planned or permitted developments would have a positive impact in terms of employment.

Contractors for the proposed development will be contractually required to operate in compliance with a project-specific Construction Environmental Management Plan (CEMP) which will include the mitigation measures outlined in this EIAR.

The overall cumulative effect during construction is therefore concluded as ***neutral imperceptible*** and ***short-term*** with respect to human health.

The air, noise and traffic assessments indicate that the proposed development is not likely to result in significant adverse impacts either alone or in combination with any likely future projects. There are no significant cumulative impacts predicted for Human Health and Populations during the operational phase of the proposed development. The cumulative impact is predicted to be ***long-term*** and ***imperceptible*** with regards to human health.

7.9 'Do-Nothing' Effect

If the Proposed Development were not to proceed, the subject land would remain undeveloped until such a time that development did take place in line with the zoning of the site. In the do-nothing scenario, where the lands remain undeveloped, there is no potential for the positive impacts associated with increased housing supply and increased childcare availability.

7.10 Difficulties in Compiling the Chapter

No particular difficulties were encountered in preparing the population assessment.

There are uncertainties in relation to assessing impacts on individuals or communities due to the lack of individual health data and the difficulty in predicting effects, which can only be based on general guidance and assumptions.

Forecasting methods and methodology, if any, are set out within the specialist chapters that this assessment relies upon.

8.0 Conclusion

This chapter of the EIAR has provided an assessment of the likely impact of the proposed development on population and human health. As set out above, the proposed development is not likely to result in any significant adverse long-term effects on population and human health, and will result in several positive impacts. These include inter alia a positive economic impact on local businesses and employment during both the construction and operational

phases of the proposed development, along with positive impacts on the land use and settlement patterns (availability of housing).

7.11 References

- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
- EPA, Advice Notes for Preparing Environmental Impact Statements Draft (2015)
- 2011 Census carried out by the Central Statistics Office (CSO) 10 April 2011. Made available from *https://www.cso.ie/en/*
- 2016 Census carried out by the Central Statistics Office (CSO) 24 April 2016. Made available from *https://www.cso.ie/en/*
- Pobal HP Deprivation Index based on 2011 Census Data (CSO) Made available from https://www.pobal.ie/
- Pobal HP Deprivation Index based on 2016 Census Data (CSO) Made available from *https://www.pobal.ie/*
- Google maps available from *https://www.google.com/maps*
- OpenStreetMap and contributors available from *https://www.openstreetmap.org*
- GeoHive contributors and available from *https://www.geohive.ie/*
- Marcoworks, Townscape and Visual Impact Assessment – Dalguise Residential Development. 2022.

8.0 BIODIVERSITY

8.1 Introduction

This chapter examines the ecology of the receiving environment within and surrounding the proposed Dalguise House Large-Scale Residential Development ("the proposed development") and assesses the potential impacts of the proposed development on Biodiversity. The methods employed to establish the ecological baseline within and around the proposed development are described, together with the process followed to determine the nature conservation importance of the ecological features present. The ways in which habitats, species and ecosystems are likely to be affected by the proposed development are described and the magnitude of the likely effects predicted, taking into account the conservation condition of the habitats and species under consideration. Mitigation measures are proposed, and any residual effects are assessed.

The surveys and assessments were led by Patrick O'Shea MCIEEM. Patrick is a Senior Ecologist in ROD and has a BA in Natural Sciences (Botany) from Trinity College Dublin and an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. He has nine years' experience in ecological survey and assessment for infrastructure projects and is a Full Member of the Chartered Institute for Ecological and Environmental Management. Patrick holds licences issued by the National Parks and Wildlife Service for bat roost disturbance during surveys (DER-BAT-2022-39) and to handle bats during the course of his work (C59/2022). Patrick was assisted by Kalvin Townsend-Smyth, Rachel Heaphy and members of the ROD Environmental team. Kalvin has a BSc (Hons) in Wildlife Biology from the Institute of Technology, Tralee and has three years' experience in ecological consultancy. Rachel holds a BSc (Hons) in Zoology from University College Cork and an MRes degree (with distinction) from the University of Roehampton and has one years' experience in ecological assessment.

8.2.1 Methodology (Legislation, Policy and Guidance)

8.2.1 Legislation

The main legislation which provides for biodiversity and nature conservation in Ireland are the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), SI No.477 of 2011 as amended, ("the Habitats Regulations" or "the Habitats Regulations 2011 to 2021" and the Wildlife Acts 1976 (as amended) (which includes inter alia the Wildlife Act 1976, the Wildlife (Amendment) Act 2000, the Wildlife (Amendment) Act 2010, the Wildlife (Amendment) Act 2012, the Heritage Act 2018, including Part 3 thereof, the Planning, Heritage and Broadcasting (Amendment) Act 2021, including Chapter 3 thereof).

The Habitats Regulations were inter alia amended by S.I. No. 290 of 2013; S.I. No. 499 of 2013; S.I. No. 355 of 2015; Planning, Heritage and Broadcasting (Amendment) Act 2021 (no.11 of 2021), Chapter 4; S.I. No. 293 of 2021. The National Parks & Wildlife Service ('the NPWS') has issued the following circulars as guidance on the implementation of the Habitats Regulations: Circular Letter NPWS 1/10; Circular Letter L8/08; Circular Letter NPWS 2/08; Circular Letter SEA 1/08 & NPWS 1/08; Circular Letter PD 2/07 & NPWS 1/07; Circular Letter NPWS 2-07 - Guidance on Compliance with Regulation 23.

The European Communities (Birds and Natural Habitats) Regulations, 2011, as amended ('the Habitats Regulations'), transpose into Irish law Directive 2009/147/EC (the 'Birds Directive') and Council Directive 92/43/EEC (the 'Habitats Directive'), which list priority habitats and species of international (European Union) conservation importance, which require protection. This protection is afforded in part through the designation of European sites – areas that represent significant occurrences of listed habitat types and populations of listed species within a European context. Areas designated for bird species are classed as Special Protection Areas (SPAs), while those designated for other protected species and/or habitats are classed as Special Areas of Conservation (SACs). Wild bird species in SPAs, and habitats and species listed on Annexes I and II (respectively) to the Habitats Directive that are contained in SACs, are legally protected. Additionally, species listed on Annex IV to the Habitats Directive are strictly protected wherever they occur – whether inside or outside the Natura 2000 network. This protection is afforded to animal and plant species by Sections 51 and 52, respectively, of the Habitats Regulations. Annex I habitats outside of SACs are still considered to be of national and international importance and, under Section 27(4)(b) of the Habitats Regulations, public authorities have a duty to strive to avoid the pollution or deterioration of Annex I habitats and all habitats integral to the functioning of SPAs.

The Wildlife Act, 1976 (as amended) ('the Wildlife Acts'), is the principle legislative mechanism for the protection of wildlife in Ireland. A network of nationally protected Nature Reserves, which public bodies have a duty to protect, is established under the Wildlife Acts. Sites of national importance for nature conservation are afforded protection under planning policy and the Wildlife Acts. Natural Heritage Areas (NHAs) are sites that are designated under the Wildlife Acts for the protection of flora, fauna, habitats and geological features of interest. Proposed Natural Heritage Areas (pNHAs) are published sites identified as of similar conservation interest, but which have not been statutorily proposed or designated – but are nonetheless afforded some protection under planning policies and objectives.

The Wildlife Acts also protect species of conservation value from injury, disturbance and damage to individual entities or to their breeding and resting places. All species listed on the relevant Schedules to the Wildlife Acts must, therefore, constitute a material consideration in the planning process.

An additional, important piece of national legislation for the protection of wild flora, i.e. vascular plants, mosses, liverworts, lichens and stoneworts, is the Flora (Protection) Order, 2015, which makes it illegal to cut, uproot or damage listed species in any way or to alter, damage or interfere in any way with their habitats.

8.2.2 Policy

This section summaries National policy relevant to this Chapter, including national policy documents and policies and objectives in the relevant county development plans.

Ireland's *National Biodiversity Action Plan (2017 – 2021)* (Department of Culture, Heritage and the Gaeltacht, 2017), in accordance with the Convention on Biological Diversity, is a framework for the conservation and protection of Ireland's biodiversity, with an overall objective to secure the conservation, including, where possible, the enhancement and sustainable use, of biological diversity in Ireland and to contribute to collective efforts for conservation of biodiversity globally. Action 1.1.3 of the *National Biodiversity Action Plan*

states that "*all Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure*" (p. 28). The plan is implemented through legislation and statutory instruments concerned with nature conservation. Ireland's 4th National Biodiversity Action Plan (NBAP) has been in development since October 2021. The Plan will set the national biodiversity agenda for the period 2023-2027. The Plan will be published in early 2023.

All-Ireland Pollinator Plan 2021 – 2025 (NBDC, 2021) seeks to halt the decline in pollinators through a range of objectives. This plan is supplemented by the guidance document *Councils: Actions to Help Pollinators* (NBDC, 2016).

Dún Laoghaire-Rathdown County Development Plan 2022-2028 (DLRCC, 2022) sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the county over the plan period. The plan sets out an approach centred on the core principle of sustainability with a focus on creating vibrant, liveable, climate resilient communities. The following policies are relevant in relation to this biodiversity assessment:

GIB18: To protect and conserve the environmental including, in particular, the natural heritage of the County and to conserve and manage nationally and internationally important and EU designated sites – such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), proposed Natural Heritage Areas (pNHAs) and Ramsar sites (wetlands) - as well as non-designated areas of high nature conservation value known as locally important areas which also serve as 'stepping stones' for the purposes of Article 10 of the Habitats Directive.

GIB19: It is a policy objective to ensure the protection of natural heritage and biodiversity, including European Sites that form part of the Natura 2000 network, in accordance with relevant EU environmental directives and applicable national legislation, policies, plans and guidelines.

GIB20: To support the provisions of the forthcoming DLR County Biodiversity Action Plan, 2021-2025.

GIB21: To protect and preserve areas designated as proposed Natural Heritage Areas, Special Areas of Conservation, and Special Protection Areas. It is council policy to promote the maintenance and as appropriate, delivery of 'favourable' conservation status of habitats and species within these areas.

GIB22: To protect and promote the conservation of biodiversity in areas of natural heritage importance outside designated areas and to ensure that notable sites, habitats and features of biodiversity importance - including species protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979, the Habitats Directive 1992, Birds and Habitats Regulations 2011, Flora (Protection) Order, 2015, Annex I habitats, local important areas, wildlife corridors and rare species - are adequately protected. Ecological assessments will be carried out for all developments in areas that support, or have potential to support, features of biodiversity importance or rare and protected species and appropriate mitigation/avoidance measures will be implemented. In implementing this policy, regard shall be had to the Ecological Network, including the forthcoming DLR Wildlife Corridor Plan, and the recommendations and objectives of

the Green City Guidelines (2008) and 'Ecological Guidance Notes for Local Authorities and Developers' (Dún Laoghaire-Rathdown Version, 2014).

GIB23: To protect the Ecological Network which will be integrated into the updated Green Infrastructure Strategy and will align with the DLR County Biodiversity Action Plan. Creating this network throughout the County will also improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. The network will also include non-designated sites.

GIB24: To maintain and protect the natural character and ecological value of the river and stream corridors in the County and where possible to enhance existing channels and to encourage diversity of habitat and nature-based solutions that incorporate biodiversity features. It is also policy (subject to the sensitivity of the riverside habitat), to provide public access to riparian corridors, to promote improved passive recreational activities.

GIB25: To retain and protect hedgerows in the County from development, which would impact adversely upon them. In addition, the Council will promote the protection of existing site boundary hedgerows and where feasible require the retention of these when considering a grant of planning permission for all developments. The Council will promote the County's hedgerows by increasing coverage, where possible, using locally native species and to develop an appropriate code of practice for road hedgerow maintenance. The Council will promote the protection of existing hedgerows when considering a grant of planning permission for all developments.

GIB26: To protect, promote and preserve sites of Geological and Geomorphological importance, in particular the proposed Natural Heritage Areas (NHAs), and any County Geological Sites (CGS), that become designated during the lifetime of the Plan.

GIB27: To retain the individual physical character of towns and development areas by the designation of green belt areas, where appropriate.

GIB28: To prepare an 'Invasive Alien Species Action Plan' for the County which will include actions in relation to Invasive Alien Species (IAS) surveys, management and treatment and to also ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).

GIB29: To increase the use of Nature Based Solutions (NBS) within the County, and to promote and apply adaption and mitigation actions that favour NBS, which can have multiple benefits to the environment and communities. NBS has a role not only to meet certain infrastructure related needs (e.g. flooding management), and development needs, but also to maintain or benefit the quality of ecosystems, habitats, and species.

GIB30: To promote biodiversity by avoiding the widespread use of chemical weedkillers, herbicides and pesticides such as glyphosate for routine road and park maintenance.

Dún Laoghaire-Rathdown County Biodiversity Action Plan 2021 – 2025 addresses biodiversity loss by outlining actions to restore and enhance biodiversity and ecosystems within the county. The main message for this plan is "*Nature Recovery, Restoration and Reconnection.* The action plan contains a map showing the county wide ecological corridors, including the Stradbrook Stream and the linear woodland along the northern boundary of the site. This ecological corridor has been considered in this assessment under Key Ecological Receptor No. 1 'Linear Woodland' and Key Ecological Receptor No. 4 'Stradbrook Stream'. A non-exhaustive list of Actions in the Biodiversity Action Plan, most relevant to the proposed development, include:

Action 3.1: Protect existing swift nesting sites where possible; establish new sites in existing public and private properties; and request artificial swift nest boxes as part of new development in DLR.

Action 3.6: To protect, restore and expand our County Ecological Network and DLR'S Green Infrastructure. Deliver Nature Recovery and Restoration as part of our Ecological Network and promote the use of Nature-based Solutions where these solutions allow the delivery and expansion of our Ecological Network.

Action 3.9*:* Complete the actions for councils outlined in the All-Ireland Pollinator Plans 2015-2020 and 2021- 2025, and create areas for wildlife and pollinators.

8.2.3 Guidance

The process of identifying, quantifying and evaluating potential impacts of the proposed development on habitats, species and ecosystems was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019). In addition, reference to the following recognised guidance defined the scope and evaluation process:

- Collins (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd Edition);
- EPA (2002) *Guidelines on the Information to be Contained in Environmental Impact Statements;*
- EPA (2003) *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*;
- EPA (2015) *Draft Advice Notes for preparing Environmental Impact Statements*;
- EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports*;
- Institution of Lighting Professionals (2020) *Guidance notes for the reduction of obtrusive light*. Guidance Note 01/20;
- Marnell, F. Kelleher, C & Mullen, E. (2022). *Bat Mitigation Guidelines for Ireland v2*. Irish Wildlife Manuals, No. 134;
- NBDC (2021) *All Ireland Pollinator Plan 2021-2025*;

- TII (2006a) *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes*;
- TII (2006b) *Guidelines for the Treatment of Bats during the Construction of National Road Schemes*;
- TII (2006c) *Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post Construction of National Road Schemes*;
- TII (2008a) *Environmental Impact Assessment of National Road Schemes – A Practical Guide* (Revision 1);
- TII (2008b) *Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*;
- TII (2008c) *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes*;
- TII (2008d) *Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes*;
- TII (2009) *Guidelines for Assessment of Ecological Impacts of National Road Schemes*;
- TII (2020a) *The Management of Invasive Alien Plant Species on National Roads – Standard*; and
- TII (2020b) *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance.*

8.3 Methodology (Ecological Impact Assessment)

This section describes the methodologies that were followed in collecting information, in describing the baseline ecological conditions and in assessing the likely impacts of the proposed development.

8.3.1 Establishing the Zone of Influence

The key factors to be taken into account when establishing the Zone of Influence for a proposed development are:

- The nature, scale, and location of the proposed development;
- The sensitivities of the ecological receptors in the receiving environment; and,
- The potential for cumulative or in-combination impacts.

For example, in the case of a proposed development connected to a river, it may be necessary to extend the Zone of Influence a significant distance upstream and/or downstream to capture all potential impacts on water-dependent ecological receptors.

Having regard to the above key variables, the Zone of Influence was defined as:

- The proposed development boundary plus a 500 m buffer
- The downstream extent of the Stradbrook Stream
- The Liffey Estuary Lower Transitional Waterbody
- The coastal waterbodies of Dublin Bay from Ireland's Eye to Dalkey Island.

This area was defined as the Zone of Influence and extends to the maximum distance at which potential adverse effects could occur including via hydrological connections i.e. foul water and surface water pathways. In addition, beyond this limit, noise and visual disturbance to birds will not occur. The Zone of Influence is presented in Appendix 8.1.

8.3.2 Establishing the Study Area

The extent of the study area is defined by the ecological features likely to occur within an effects distance from the proposed development. The desk study area covered the entire Zone of Influence, as described in the preceding section. For the field study, however, it was not practical to carry out surveys over such a large area. Therefore, the field study area was limited to the area subject to direct impacts or immediate effects, i.e. the proposed development boundary, plus a maximum distance of 150m upstream and downstream of the Stradbrook Stream where accessible, as well as the location of a heronry in Southdene, a residential development adjoining the western side of the site. This area was considered to be adequate to identify all ecological features which could potentially be subject to direct impacts from the proposed development or act as pathways for indirect impacts or effects to other features in the wider Zone of Influence.

8.3.3 Approach and Objectives

A habitat is the environment in which an animal or plant lives and is generally defined in terms of vegetation and physical structures. Habitats and species of ecological significance occurring or likely to occur within the defined **Zone of Influence** and **study area** of the proposed development were classified as **Key Ecological Receptors**.

In accordance with Transport Infrastructure Ireland's (TII) *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009), an impact assessment has been undertaken of Key Ecological Receptors within the Zone of Influence of the proposed development. While these guidelines were specifically designed for national road schemes, their guidance on how to assess ecological impacts is comprehensive and applicable to a wide range of different types of projects. According to these guidelines, the Zone of Influence is the "effect area" over which change resulting from the proposed development is likely to occur. The Key Ecological Receptors are defined as features of sufficient value as to be material in the decision-making process for which potential impacts from the proposed development are likely.

In the context of the proposed development, a Key Ecological Receptor is defined as any feature valued as being of one of the following levels of importance:

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

Features of Local Importance (Lower Value) and features of no ecological value and are not considered to be Key Ecological Receptors. The assessment does not consider effects on aspects of the environment other than Biodiversity.

This chapter quantifies the potential impacts on identified Key Ecological Receptors and prescribes mitigation measures required to avoid and reduce any likely significant effects.

Determining the ecological issues to be addressed for the assessment was informed by early engagement with relevant stakeholders. During this scoping process, selected consultees were provided the opportunity to input into the proposed development through preliminary discussions on Key Ecological Receptors that could potentially be affected; strategies to avoid negative impacts; and, where possible, compensation or enhancement measures. Further details of the consultation process, including a list of the statutory and non-statutory consultees contacted, can be found in Table 8-1.

On completion of scoping, a desk study was undertaken to review all available published data describing the ecological conditions within the greater area of the proposed development. The desk study cross-referenced this published data with publicly available maps and aerial orthophotography from Ordnance Survey Ireland (OSi), National Parks & Wildlife Service (NPWS) and Environmental Protection Agency (EPA) to identify Key Ecological Receptors. During preparation of this assessment, the statutory conservation agency, the NPWS, provided data on nature conservation designations, habitats and species of conservation interest. The baseline information obtained from the desk study was the first stage in defining the Zone of Influence of the proposed development.

Determining baseline ecological conditions allows an accurate prediction of the likely impacts of the proposed development on Key Ecological Receptors and an assignment of ecological significance to them.

Where negative impacts were identified, detailed and specific mitigation measures have been proposed in accordance with the hierarchy of options suggested in the research for the European Commission publication *Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EC, 2021). Preference was given to avoiding impacts at their source. Where this was not possible, the following approaches were adopted, in order of decreasing preference: reduce impacts at source, abate on site, and finally abate at receptor. These measures have been incorporated into the design of the proposed development.

The information provided in this chapter accurately and comprehensively describes the baseline ecological environment, provides an accurate prediction of the likely significant ecological impacts of the proposed development, prescribes specific mitigation as necessary and describes any residual ecological effects.

8.3.4 Terminology

The evaluation of Key Ecological Receptors and the criteria used to determine ecological value is in accordance with the aforementioned guidance (TII, 2009). The description of effects is in accordance with *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022).

8.3.5 Desk Study

The desk study undertaken for this Chapter included a review of available ecological data from the following sources:

- The National Parks & Wildlife Service (NPWS) Designations Viewer was reviewed to determine the location of nationally and internationally designated sites within the Zone of Influence of the proposed development
- The National Parks & Wildlife Service (NPWS) provided rare and protected species records from within 10km of the proposed development.
- The National Biodiversity Data Centre (NBDC) database provided species records within 2km of the proposed development.
- Bat Conservation Ireland (BCI) provided records of bat within 1km of the proposed development.
- Environmental Protection Agency (EPA) Unified GIS Application provided data in relation to the Water Framework Directive Risk/Status of waterbodies in the Zone of Influence.
- Irish Wetland Bird Survey (I-WeBS) data from BirdWatch Ireland provided monthly counts for survey sub-sites in Dublin Bay
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- The previous planning application documents relevant to biodiversity were also reviewed:
- Openfield (2020) Ecological Impact Statement for residential development, Dalguise House, Monkstown, Co. Dublin
- Wildlife Surveys (2018) A bat impact assessment of Dalguise House and surrounding lands, Monkstown Rd, Monkstown, Dun Laoghaire/Rathdown, Co. Dublin and potential impacts of the proposed development. A report for Horan Rainsford Architects, Dublin.
- Enviroguide (2021) Bird survey results 2020/2021 at Lands at Dalguise House, Monkstown, Co. Dublin.
- Bat Derogation Licence issued by the NPWS (DER BAT 2020-28)
- The An Bord Pleanála Inspectors Report for the proposed development, including the
- Planning submission from the Development Application Unit of the NPWS
- The Grounding Affidavit of Monkstown Residence Association and others (second amended statement)
- The Grounding Affidavit of Starrs Holdings Ltd
- Filed Affidavit of Padraic Fogarty
- Filed Affidavit of Brian Keeley
- Monkstown Road Residents Association vs An Bord Pleanála [2022] IEHC2020/737JR

As with all desk studies, the data is only as good as the data supplied by the recorders and recording schemes. The recording schemes provide disclaimers in relation to the quality and quantity of the data they provide, and these were considered when examining the outputs of the desk study.

8.3.6 Consultation

The consultees listed in Table 8-1 were contacted and invited to submit any observations in relation to ecology and nature conservation. Observations received relevant to this chapter are summarised in Table 8-1 below. Concerns raised by the consultees have been addressed as far as possible.

The purpose of the consultations was to:

- Identify any relevant information that consultees held, including the presence of data on protected species or species of conservation concern;
- Identify any concerns that consultees may have in relation to the proposed development; and,
- Identify any issues that the consultees would like to see addressed during the ecological impact assessment process.

Table 8-13 Details of Consultations

Consultee	Date	Summary
Department of Housing, Department of Housing, Local Government and Heritage (National Parks & Wildlife Service)Local Government and Heritage (National Parks & Wildlife Service)	24th March 2022	A response to the consultation request was received from the NPWS. The NPWS made the following observations: • All the measures to prevent sediments and other potential pollutants entering the Stradbrook Stream set out in the Outline Construction Management Plan and the EcIA supporting this application are implemented in full; and that a Construction and Environmental Plan detailing these measures and the methodology and timetable for their implementation be submitted for the written agreement of the Planning Authority before any development commences on site. • Any clearance of vegetation from the development site should only take place outside the main bird nesting season i.e. in the period from the 1st of September to the end of February. • A grey heron conservation plan for the Dalguise House site should be drawn up by the applicant, in consultation with the Biodiversity Officer of Dún Laoghaire- Rathdown County Council and submitted for the written agreement of the planning authority before any development commences on site. • All measures set out in the submitted Bat Impact Assessment and EcIA to conserve bats during the construction and occupational phases of the proposed development should be implemented in full, these to include further bat surveys preceding any building demolition or tree felling, the supervision of such demolition and felling by a bat

Consultee	Date	Summary
		specialist, the provision of bat boxes and installation of bat friendly lighting.
Inland Fisheries Ireland (IFI)	12th January 2022	A response to the consultation request was received from IFI. IFI made the following observations: IFI stated the following: • Best practice should be implemented at all times in relation to any activities that may impact on surface water. • Disturbance of riparian habitats should be minimised. • Good housekeeping measures are integral to achieving prevention of excessive turbid run-off to surface water systems. • An Invasive Species and Biosecurity Plan should be included to treat and manage identified invasive species onsite. • The specific details of any works directly affecting watercourses or riparian habitats in the area, in particular surface water discharges to the stream must first be submitted to IFI for assessment. In addition to this, IFI highlighted best practice guidance material which should be followed in order to avoid negative effects on surface waters.
Dún-Laoghaire Rathdown County Council Biodiversity Officer	27th June 2022	The Biodiversity Officer referred to the Biodiversity Action Plan and DLR Otter Survey, and also made the following observations: • Surveys of rare and protected species including large mammals, bats, invasive species, plants and breeding birds should be undertaken by specialists. • Examine how the watercourse can be improved as a result of the proposed development. • Cumulative Impacts should be considered. • The Zone of Influence for the proposed development should be considered. • Opportunities to improve the area including the riparian habitat within the zone of influence should be looked at. • Investigate if there is a weir which can be removed as part of enhancement measures.

8.3.7 Ecological Survey Methodology

Field surveys were conducted adhering to the following guidelines:

- *Guidelines for Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (TII, 2008b)
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (TII, 2009)

- Best *Practice Guidance for Habitat Survey and Mapping* (Smith et al., 2011)
- *A Guide to Habitats in Ireland* (Fossitt, J. 2000)
- *Interpretation Manual of European Union Habitats* (EC, 2013)
- *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* (TII, 2008c)
- *Threat Response Plan: Otter (2009-2011)* (NPWS 2009)
- *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, J. (ed.) 2016)
- *CBS Manual Guidelines for Countryside Bird Survey participants* (Birdwatch Ireland 2012)
- *Bird Atlas 2007-11* (BTO, 2011)

8.3.8 Overview of Ecological Surveys

Field surveys were undertaken in 2021 and 2022 (see Table 1-2 for details). The surveys aimed to detect the presence, or likely presence, of rare/threatened, protected and invasive species, and to record the habitats present in the study area. The surveys provided baseline information regarding the existing ecology of the study area. Incidental records of plants, bird species and protected species were collected throughout the surveys in 2021 and 2022.

Specific ecological surveys were carried out with respect to the following:

- Habitats
- Otter
- Badger
- Bats
- Breeding Birds
- Reptiles and Amphibians
- Invasive Species
- Water Chemistry and Freshwater Invertebrate Sampling

Results of these surveys are presented in Section 8.5. Table 1-2 below lists the surveys, dates and personnel involved. Where the surveys were carried out over several days, the exact dates are listed in the individual sections.

Table 8-14 Ecological Survey Details

Survey	Date	Surveyor
Habitats	20th June & 5th July 2021	Patrick O'Shea, Rachel Heaphy and Kalvin Townsend-Smyth
Otter	26th July 2021	Patrick O'Shea and Rachel Heaphy
Badger	20th June & 5th July 2021	Patrick O'Shea, Rachel Heaphy and Kalvin Townsend-Smyth
Bats	June - August 2021, October 2021	Patrick O'Shea, Rachel Heaphy, Kalvin Townsend-Smyth and ROD Environment Team

Survey	Date	Surveyor
Breeding Birds	20h June & 5th July 2021, 17th January 2022, 31st March 2022.	Patrick O'Shea, Rachel Heaphy and Kalvin Townsend-Smyth
Reptiles and Amphibians	20th June & 5th July 2021	Patrick O'Shea, Rachel Heaphy and Kalvin Townsend-Smyth
Invasive Species	20th June & 5th July 2021	Patrick O'Shea, Rachel Heaphy and Kalvin Townsend-Smyth
Water Chemistry and Freshwater Invertebrate Sampling	12th October 2021	APEM

8.3.8.1 Habitats

Habitat surveys were conducted in accordance with best practice guidance (Smith et al., 2011). The entire site was systematically surveyed, and all habitats present were assessed, classified and sketched onto field maps. Habitats were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000) and any habitats corresponding to types listed on Annex I to the Habitats Directive were identified using the *Interpretation Manual of European Union Habitats* (EC, 2013).

8.3.8.2 Otter

An Otter survey was conducted adhering to best practice guidelines (TII, 2008b,c), and involved a systematic search of the entire site, and 150m upstream and downstream along the Stradbrook Stream, where accessible. The survey involved a search for signs of otter activity (prints, spraints, trails, holts, couches, slides, feeding remains etc.).

8.3.8.3 Badger

The badger survey was conducted as part of the multidisciplinary walkover surveys and aimed to identify the presence or likely presence of Badger (Meles meles) in the study area. The badger survey was conducted following best practice guidance (TII, 2008b) and involved a systematic search for physical evidence of badgers, e.g. setts, latrines, and badger paths. The optimal period for badger surveys is during the seasonal peaks in territorial activity and when vegetation cover which may obscure signs is at a minimum (January to April and less pronounced peak in October).

8.3.8.4 Bats

Bat suitability assessment

The bat suitability assessment focussed on identifying built or natural features within the site of the proposed development. The bat suitability assessment was conducted adhering to best practice guidelines (TII, 2006a,b; Collins (ed.), 2016) and involved a visual assessment and categorisation of suitable features on trees and structures capable of supporting

roosting bats. Trees and structures were assessed using the recognised criteria outlined in Collins (ed.) (2016).

Emergence/Re-entry Surveys

Following the bat roost suitability assessment, trees and structures which were considered suitable for bats to roost in were surveyed. The emergence surveys were undertaken between 15 minutes before sunset and 105 minutes after sunset. The re-entry surveys were undertaken from 90 minutes before sunrise to sunrise. The emergence and re-entry surveys adhered to best practice guidelines (Collins (ed.), 2016).

Surveyors undertook their work in pairs or groups. The surveyors used either Anabat Walkabout or Song Meter EM3+ bat detectors. Both detectors allow visual validation of echolocation recordings (species identification) in real time.

Following each survey, recordings (detections) were processed using Kaleidoscope Pro Analysis or BTO Acoustic Pipeline software to extract information including sound recordings, sonograms, GPS coordinates, time, date and species identification confidence values. Recordings with low confidence values or of rare species were validated manually.

Static Bat Surveys

Static bat detectors (Song Meter Mini Bat) were deployed at the row of sheds at the southern edge of the site and at the meadow on the northern side of the site. The detectors were set to record from sunset to sunrise and were left recording for two weeks in June and July. The data collected was analysed using Kaleidoscope Pro Analysis or BTO Acoustic Pipeline software.

8.3.8.5 Breeding Birds

The breeding bird survey followed the Countryside Bird Survey (CBS) methodology (Birdwatch Ireland, 2012). A predetermined transect route was walked early in the morning at a slow pace, and birds within the surveyor's field of vision and hearing were recorded. Two breeding bird surveys were undertaken at the site, one on the 20th June and the second on 9th July and both surveys lasted approximately 1 hour. The surveyor also used x10 binoculars to aid the identification of birds at distance. All bird species were recorded using standard British Trust for Ornithology (BTO) species codes. Evidence of breeding for each bird species was also collected, noting 'possible', 'probable' and 'confirmed' breeding as outlined in *Bird Atlas 2007-11* (BTO, 2011). Incidental recordings of bird species were also made during the other ecological surveys.

In addition to this, a Grey Heron survey was carried out on 17th January 2022. This survey involved an inspection of trees within and adjacent to the site of the proposed development for Grey Heron nests. This exercise is easier in the winter when broadleaved trees are not in leaf. Notes were take on the location of these nests, what species of tree they were nesting in, the size of the nests and whether they appeared to be new or old. A survey of the nests was carried out on the 31st January 2022. The purpose of this was to record activity at the nests recorded in January 2022.

8.3.8.6 Wintering Birds

A wintering bird survey (Enviroguide, 2021) was undertaken in winter 2020/21. The report did not record any Qualifying Interest bird species on the site, despite significant survey effort, with 36 hours spent surveying over six days. This corroborates the assessment made in 2021 as part of the habitat survey which noted that the site is unsuitable for wintering wetland birds. Wetland bird species are typically associated with coastal and intertidal habitats. While some species, such as Light-bellied brent Geese are known to feed on amenity grassland, the site of the proposed development does not contain large open spaces, which do not impede their sightlines. The front lawn has fences and is dotted with trees, while the northern lawn near Purbeck is on a slope. Both of these areas are surrounded by tall trees.

8.3.8.7 Other Mammals, Reptiles and Amphibians

During the ecological surveys, the potential for the Study area to support other species protected under the Wildlife Acts, such as Irish Hare, Pygmy Shrew, deer species, Irish Stoat, Hedgehog and Common Lizard was assessed. Any natural and built features that could potentially support these species were searched thoroughly and any physical evidence, such as live sightings, feeding signs and droppings/scats. Any incidental evidence of these species observed during the surveys was recorded.

8.3.8.8 Invasive Plant Species

Invasive plants, including species listed on the Third Schedule to the Habitats Regulations, but also other species which can negatively impact biodiversity were recorded and their distributions sketched on field maps. Target notes were taken which detailed height, density, and any signs of previous management.

8.3.8.9 Water Chemistry and Freshwater Invertebrate Sampling

The water quality assessment included semi-quantitative sampling of benthic macroinvertebrates and chemical analysis at two locations on the Stradbrook Stream, upstream and downstream of the proposed bridge. The locations were selected to provide baseline data upstream and downstream of the proposed in-stream works. The methodology used in the water quality assessment report is provided in Appendix 8.6.

8.3.9 Assessment Methodology

The ecological evaluation and impact assessment methodology within this Chapter follows the methodology that is set out in Chapter 3 of *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (TII, 2009).

Evaluation of ecological resources

The criteria used for the ecological evaluation follow those set out in Section 3.3 of TII (2009). These guidelines set out the context for the determination of value on a geographic basis, with

a hierarchy assigned in relation to the importance of any receptor based on the following scale:

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

The Guidelines clearly set out the criteria by which each geographic level of importance can be assigned. For example, Locally Important (Lower Value) receptors contain habitats and species that are widespread and of low ecological significance and only of importance in the local area. Conversely, Internationally Important sites are either designated for conservation as part of the Natura 2000 network (SACs or SPAs) or provide the best examples of habitats or internationally important populations of protected species.

All habitats and species within the Zone of Influence and Study area were assigned a level of significance on the above basis, and Key Ecological Receptors were established and classified on this basis.

Characterisation of ecological impacts

The impact assessment herein uses the EPA (2022) and is based on the criteria listed in Annex III of the amended EIA Directive, but also has regard to the EPA (2015) guidelines in relation to characterising the impact of the proposed development on the receiving environment. The parameters used to characterise ecological impacts are:

- The magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected).
- The nature of the impact.
- The transboundary nature of the impact;
- The intensity and complexity of the impact;.
- The probability of the impact.
- The expected onset, duration, frequency and reversibility of the impact;
- The cumulation of the impact with the impact of other existing and/or approved project
- The possibility of effectively reducing the impact.

Definitions of terms used when quantifying duration of impacts are defined below, as per EPA (2022):

- Momentary – seconds to minutes
- Brief – less than a day
- Temporary – up to 1 year
- Short-term – 1 to 7 years
- Medium-term – 7 to 15 years
- Long-term – 15 to 60 years
- Permanent – over 60 years

It is necessary to ensure that any assessment of impacts takes account of the construction and operational phases; direct, indirect and cumulative impacts; and impacts that are temporary, reversible and irreversible.

Assessing the Significance of Effects

The significance of effects was determined following guidelines set out in Section 6.2.20 of TII (2009), whereby effects are assigned significance based on the characterisation of impacts, irrespective of the value of the receptor. Significance is determined by effects on conservation status or integrity, regardless of geographical level at which these would be relevant.

Quality and Significance are the most relevant criteria for the assessment of effects on biodiversity. These criteria are defined in EPA (2022) and reproduced in Table 1-3 and Table 1-4 respectively.

Table 8-15 Criteria for assessing quality (EPA, 2022)

Quality	Criteria
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

Table 8-16 Criteria for assessing significance (EPA, 2022)

Significance	Criteria
No change	No discernible change in the ecology of the affected feature.
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

Mitigation, compensation and enhancement

The proposed development has been designed to specifically avoid, reduce and/or minimise impacts on all Key Ecological Receptors. The potential impacts of the proposed development have been considered and assessed to ensure that all impacts on Key Ecological Receptors are adequately addressed. Where potential significant impacts on Key Ecological Receptors are predicted, mitigation has been prescribed to ameliorate such impacts. Proposed best practice and mitigation measures are specifically set out in this chapter and are realistic in terms of cost and practicality. Mitigation measures follow best practice and have a high probability of success in terms of addressing the impacts on the identified Key Ecological Receptors.
The need for compensation and/or enhancement measures has also been considered. Compensatory measures are those which 'offset' significant residual (post-mitigation) impacts. Enhancement measures are those which "*seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation*" (CIEEM, 2019 p. 12).

8.4 Baseline Environment (Desk Study Results)

8.4.1 General Description and Context

The proposed development site is located approximately 300 m to the west of Monkstown Village and 240 m south of Seapoint Beach. The site is 3.58 ha in area, predominantly rectangular in shape and currently in use as a private dwelling.

The proposed development site is bordered and divided by a network of mature treelines and linear woodlands. It is bounded to the south, east and west by residential developments and to the north by the Stradbrook Stream, residential developments and Monkstown Road. The surrounding area is dominated by suburban residential development. It is within the catchment of the Stradbrook Stream, which flows east-west and eventually discharges into Dublin Bay. The Stradbrook Stream is characterised by artificial embankments along most of its length. The stream is highly modified and is culverted until it reaches its outfall at the west pier in Dún Laoghaire. The EPA have no monitoring points and it is not assessed under the Water Framework Directive.

The coastal waterbodies of Dublin Bay are monitored by the EPA

The site contains good quality habitat for bats and bird species. An established heronry exists in the mature trees along the western site boundary. Grey Heron (*Ardea cinerea*) was recorded on the site on most of the field surveys.

Ringsend Wastewater Treatment Plant, built in 2005, currently discharges treated wastewater into the Lower Liffey Estuary via an outfall approximately 1 km from the facility. It is currently operating at levels in excess of its intended design capacity and is therefore, not in compliance with the European Union's Urban Wastewater Treatment Directive. Irish Water have begun to upgrade the current infrastructure to achieve compliance with the Urban Wastewater Treatment Directive (91/271/EEC), with aims to have these works completed in 2025. This upgrade will provide additional secondary treatment capacity with nutrient reduction, additional capacity to the 24 existing secondary tanks, a new phosphorus recovery process and expansion of the plant's sludge treatment facilities.

8.4.2 Designated Sites

The NPWS online map viewer was consulted in order to identify the boundaries of designated sites within the Zone of Influence.

There are 12 European sites (SAC/SPA) and seven nationally designated sites (pNHA) within the Zone of Influence. Other internationally designated sites including the Dublin Bay UNESCO Biosphere Reserve, the Dublin Bay Important Bird Area (IBA), and the Sandymount Strand/Tolka Estuary Wetland of International Importance (WII) have connectivity to the proposed development. Some of these designated sites refer to the same areas.

The designated sites within the Zone of Influence are presented in Appendix 8.1, and Table 1-5 and described in the following sections.

Table 8-17 Designated sites within the Zone of Influence.

Designated site [site code]	Distance from the proposed development
European Designated Sites	
South Dublin Bay SAC [000210]	The shortest absolute distance from the proposed development to this site is c. 340 m north to Seapoint Beach. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 1.1 km north through the Stradbrook Stream and Dublin Bay to Seapoint Beach, which is 200 m west of the stream outfall. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall hydrologically, around the South Bull Wall, over a distance of 3.75km.
South Dublin Bay and River Tolka Estuary SPA [004024]	The shortest absolute distance from the proposed development to this site is c. 230 m north to Seapoint Beach. This distance is over land and this location is within of the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 810 m northeast through the Stradbrook Stream to its outfall on the west side of the West Pier Pumping Station. In addition to this, this site located 650m from the Ringsend Wastewater Treatment Plant outfall hydrologically, at the ESB Dolphin.
North Bull Island SPA [004006]	The shortest absolute distance from the proposed development to this site is 5.8 km north at the North Bull Lighthouse. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 6.4 km north through the Stradbrook Stream and Dublin Bay to the North Bull Lighthouse. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 2 km.
North Dublin Bay SAC [000206]	The shortest absolute distance from the proposed development to this site is 5.8 km north just beyond the North Bull Lighthouse. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 6.4 km north through the Stradbrook Stream and Dublin Bay to just beyond the North Bull Lighthouse. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 2 km.

Designated site [site code]	Distance from the proposed development
Baldoyle Bay SAC [000199]	The shortest absolute distance from the proposed development to this site is 11.4 km north at Sutton Golf Club. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 16 km through the Stradbrook Stream and Dublin Bay. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant at a distance of 14 km. Given the assimilative capacity of Dublin Bay, any water quality impacts would be negligible by the time they reached this site. Therefore, there are not considered to be any pathways for impact between the proposed development and this site.
Baldoyle Bay SPA [004016]	The shortest absolute distance from the proposed development to this site is 11.4 km north at Sutton Golf Club. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 17.6 km through the Stradbrook Stream and Dublin Bay, although many wintering birds are likely to travel across Dublin Bay so ex-situ pathways are considered to exist. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 15.8 km.
Dalkey Islands SPA [004172]	The shortest absolute distance from the proposed development to this site is 4.4 km east beyond Scotsman's Bay. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 6.1 km northeast through the Stradbrook Stream, around the east of Dún Laoghaire Harbour and off the coast of Dalkey. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 10.1 km.
Rockabill to Dalkey Island SAC [003000]	The shortest absolute distance from the proposed development to this site is 4.4 km southeast to the northside of Maiden Rock. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 5.3 km southeast through the Stradbrook Stream, around the east of Dun Laoghaire Harbour and off the coast of Dalkey. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 6 km.
Howth Head Coast SPA [004113]	The shortest absolute distance from the proposed development to this site is 10.3 km northeast to Bailey Lighthouse. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 10.6 km northeast through the Stradbrook Stream and Dublin Bay to Bailey Lighthouse. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 15.8 km.
Howth Head SAC [000202]	The shortest absolute distance from the proposed development to this site is 9 km northeast to Martello Tower, Sutton. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 9.5 km northeast through the Stradbrook Stream and Dublin Bay to Martello Tower, Sutton. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 6.5 km.
Ireland's Eye SPA [004117]	The shortest absolute distance from the proposed development to this site is 13.1 km northeast to the southern perimeter of the site. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 14.8 km through the Stradbrook Stream and Dublin Bay, although many wintering birds are likely to travel across Dublin Bay so ex-situ pathways are considered to exist. In addition to this, the site is hydrologically connected to Ringsend Wastewater Treatment Plant outfall at a distance of 13 km.

Designated site [site code]	Distance from the proposed development
Ireland's Eye SAC [002193]	The shortest absolute distance from the proposed development to this site is 13.6 km northeast to the Thulla. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 15.6 km through the Stradbrook Stream and Dublin Bay. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 13.6 km. Given the assimilative capacity of Dublin Bay, any water quality impacts would be negligible by the time they reached this site. Therefore, there are not considered to be any pathways for impact between the proposed development and this site.
Nationally Designated Sites	
Baldoyle Bay pNHA [000199]	The shortest absolute distance from the proposed development to this site is 11.4 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 15.8 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of 6.1 km from the site. Therefore, the effective distance to the site is 6.1 km.
Howth Head pNHA [000202]	The shortest absolute distance from the proposed development to this site is 9 km north-east. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 10.6 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of 6.9 km from the site. Therefore, the effective distance to the site is 6.9 km.
Ireland's Eye pNHA [000203]	The shortest absolute distance from the proposed development to this site is 13.5 km north-east. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 15.6 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of 13.5 km from the site. Therefore, the effective distance to the site is 13.5 km.
North Dublin Bay pNHA [000206]	The shortest absolute distance from the proposed development to this site is 5.8 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 6.4 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of 2.5 km from the site. Therefore, the effective distance to the site is 2.5 km.
South Dublin Bay pNHA [000210]	The shortest absolute distance from the proposed development to this site is 680 m north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 350 m (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is located immediately adjacent to the site.
Dalkey Coastal Zone and Killiney Hill [001206]	The shortest absolute distance from the proposed development to this site is 1.9 km east. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 4.5 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of 7.1 km from the site. Therefore, the effective distance to the site is 4.5 km.

Designated site [site code]	Distance from the proposed development
Dolphins, Dublin Docks pNHA [000201]	The shortest absolute distance from the proposed development to this site is 5.9 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 8.5 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of 4.7 km from the site. Therefore, the effective distance to the site is 4.7 km.
Internationally Designated Sites	
Sandymount Strand and Tolka Estuary Ramsar site	The shortest absolute distance from the proposed development to this site is *c.* 230 m north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is *c.* 810 m (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is located immediately adjacent to the site.
North Bull Island Ramsar site	The shortest absolute distance from the proposed development to this site is *c.* 6 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is *c.* 6 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of *c.* 2.5 km from the site. Therefore, the effective distance to the site is 2.5 km.
Baldoyle Bay Ramsar site	The shortest absolute distance from the proposed development to this site is *c.* 11 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is *c.* 18 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of *c.* 16 km from the site. Therefore, the effective distance to the site is 16 km.
North Dublin Bay MPA	The shortest absolute distance from the proposed development to this site is c. 6 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is *c.* 6 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of *c.* 2.5 km from the site. Therefore, the effective distance to the site is 2.5 km.
The North Bull Island Wildfowl Sanctuary	The shortest absolute distance from the proposed development to this site is *c.* 6 km north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is *c.* 6 km (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is at a hydrological distance of *c.* 2.5 km from the site. Therefore, the effective distance to the site is 2.5 km.
Dublin Bay Biosphere	The shortest absolute distance from the proposed development to this site is *c.* 230 m north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is *c.* 810 m (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is located immediately adjacent to the site.

Designated site [site code]	Distance from the proposed development
Dublin Bay Important Bird Area	The shortest absolute distance from the proposed development to this site is 230 m north. This distance is over land. The shortest distance from the proposed development to the site via a hydrological connection is 810 m (along the Stradbrook Stream and Dublin Bay) which is within the Zone of Influence. There is another potential pathway via the foul water drainage network between the proposed development and this site through the Ringsend Wastewater Treatment Plant outfall pipe which is located immediately adjacent to the site.

With regard to European sites, it was determined that likely significant effects as a result of the proposed development could not be ruled out. Therefore, a Natura Impact Statement (NIS) has been prepared in respect of the proposed development, detailing the potential adverse effects and prescribing appropriate measures to mitigate those effects. The NIS states the following:

"*It is the considered opinion of ROD, as the author of this NIS, that, in making its AA in respect of the proposed Dalguise House Residential Development, Dún Laoghaire Rathdown County Council, as the Competent Authority in this case, may determine that, given the full and proper implementation of the mitigation prescribed in this NIS, the proposed development, either individually or in combination with other plans or projects, will not adversely affect the integrity of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC or the Dalkey Islands SPA.*"

There are seven pNHAs as well as a number of other designated sites such as Ramsar sites, Marine Protected Areas (MPAs) and Wildfowl Sanctuaries located within the Zone of Influence which are hydrologically connected to the proposed development. This hydrological connection between the proposed development and these designated sites provides a pathway for water quality impacts to be carried to these sites. However, this hydrological connection is through Dublin Bay which is a significant waterbody with a high assimilative capacity. Theses designated sites support a range of rare and protected species and habitats, some of which are listed on Annex I and IV to the Habitats Directive.

The descriptions of the European designated sites in Section 8.4.3 below are based on the Site Synopses, Conservation Objectives and Natura 2000 Standard Data Forms, as well as the Conservation Objectives supporting documents, where applicable. The descriptions of the pNHAs in Section 8.4.4 are based on the respective Site Synopses, where available. The description of the other designated sites in Section 8.4.5 are based on information available on their respective websites.

8.4.3 European Designated Sites

South Dublin Bay SAC [000210]

This site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/ Booterstown. Drift

line vegetation occurs in association with the embryonic and incipient fore dunes. A small area of pioneer saltmarsh occurs in the lee of an embryonic sand dune just north of Booterstown Station. South Dublin Bay is an important site for waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. This site is a fine example of a coastal system, with extensive sand and mudflats, and incipient dune formations. South Dublin Bay is also an internationally important bird site.

South Dublin Bay and River Tolka Estuary SPA [004024]

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included. In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The South Dublin Bay and River Tolka Estuary SPA is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. It is of note that four of the species that regularly occur at this site are listed on Annex I of the Birds Directive, i.e. Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Sandymount Strand/Tolka Estuary is also a Ramsar Convention site.

North Bull Island SPA [004006]

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th Centuries. It is c. 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses. The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary.

North Dublin Bay SAC [000206]

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. North Bull Island is a sandy spit which extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (*Alnus glutinosa*). Saltmarsh extends along the length of the landward side of the island. The habitat 'annual vegetation of drift

lines' is found in places, along the length of Dollymount Strand. The island shelters two intertidal lagoons which are divided by a solid causeway. The north lagoon has an area known as the "Salicornia flat" which covers about 25 ha. Three rare plant species which are legally protected under the Flora (Protection) Order, 2015 have been recorded on the North Bull Island. These are Lesser Centaury (*Centaurium pulchellum*), Red Hemp-nettle (*Galeopsis angustifolia*) and Meadow Saxifrage (*Saxifraga granulata*). *Petalophyllum ralfsii* is a species of high conservation value as it is listed on Annex II of the Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard. North Dublin Bay is of international importance for waterfowl Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes. A well-known population of Irish Hare is resident on the island. The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland.

The main land uses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a number of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

Baldoyle Bay SAC [000199]

Baldoyle Bay SAC extends from just below Portmarnock village to the west pier at Howth in Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand-dune system. Two small rivers, the Mayne and the Sluice, flow into the bay. Large areas of intertidal flats are exposed at low tide at this site. These are mostly sands but grade to muds in the inner sheltered parts of the estuary. Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips along other parts of the estuary. A few dune hills are intact at Portmarnock Point, and there are small dune hills east of Cush Point and below the Claremont Hotel. The site includes a brackish marsh along the Mayne River. Soils here have a high organic content and are poorly drained, and some pools occur. Knotted Hedgeparsley (*Torilis nodosa*), a scarce plant in eastern Ireland, has been recorded here, along with Brackish Water-crowfoot (*Ranunculus baudotti*), a species of brackish pools and ditches which has declined in most places due to habitat loss. Two plant species, legally protected under the Flora (Protection) Order, 1999, occur in the Mayne marsh, Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*). Baldoyle Bay is an important bird site for wintering waterfowl and the inner part of the estuary is a Special Protection Area under the Birds Directive as well as being a Statutory Nature Reserve. Internationally important numbers of Pale-bellied Brent Goose and nationally important numbers of two Annex I Birds Directive species - Golden Plover and Bar-tailed Godwit - have been recorded. Four other species also reached nationally important numbers: Shelduck,

Pintail, Grey Plover and Ringed Plover. Breeding wetland birds at the site include Shelduck, Mallard and Ringed Plover. Small numbers of Little Tern, a species listed on Annex I of the E.U. Birds Directive, have bred on a few occasions at Portmarnock Point. The area surrounding Baldoyle Bay is densely populated and so the main threats to the site include visitor pressure, disturbance to wildfowl and dumping. In particular, the dumping of spoil onto the foreshore presents a threat to the value of the site. Baldoyle Bay is a fine example of an estuarine system. It contains four habitats listed on Annex I of the Habitats Directive, and supports two legally protected plant species. The site is also an important bird area and part of it is a Special Protection Area under the E.U. Birds Directive, as well as being a Statutory Nature Reserve. It supports internationally important numbers of Brent Goose and nationally important numbers of six other bird species, including two Annex I Birds Directive species.

Baldoyle Bay SPA [004016]

Baldoyle Bay, located to the north and east of Baldoyle and to the south of Portmarnock, Co. Dublin, is a relatively small, narrow estuary separated from the open sea by a large sand dune system. Two small rivers, the Mayne River and the Sluice River, flow into the inner part of the estuary.

Large areas of intertidal flats are exposed at low tide. Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips found along other parts of the estuary. Baldoyle Bay is an important site for wintering waterfowl, providing good quality feeding areas and roost sites for an excellent diversity of waterfowl species. It supports an internationally important population of Light-bellied Brent Goose and has a further five species with nationally important populations. Baldoyle Bay SPA is of high conservation importance, for supporting internationally important numbers of Light-bellied Brent Goose as well as nationally important populations of a further five species, including Golden Plover and Bar-tailed Godwit, both species that are listed on Annex I of Birds Directive. The inner part of the site is a Statutory Nature Reserve and also designated as a wetland of international importance under the Ramsar Convention.

Dalkey Islands SPA [004172]

The site comprises Dalkey Island, Lamb Island and Maiden Rock, the intervening rocks and reefs, and the surrounding sea to a distance of 200 m. Dalkey Island, which is the largest in the group, lies c. 400 m off Sorrento Point on the Co. Dublin mainland from which it is separated by a deep channel. Dalkey Islands SPA is both a breeding and a staging site for Sterna terns. There is a good history of nesting by terns though success has been variable over the years. Common Tern is the most common species, usually outnumbering Arctic Tern by at least 3:1. A tern conservation scheme, co-ordinated by BirdWatch Ireland / National Parks and Wildlife Service, began in 1995, with wardening, nestbox deployment and monitoring being carried out. The ultimate aim was to attract Roseate Tern to breed. The site, along with other parts of south Dublin Bay, is used by the three tern species as a major post-breeding/pre-migration autumn roost area. The site is linked to another important post-breeding/pre-migration autumn tern roost area in Dublin Bay. Dalkey Islands SPA is of particular importance as a post-breeding/pre-migration autumn roost area for Roseate Tern, Common Tern and Arctic Tern. The recent nesting by Roseate Tern is highly significant. All three tern species using the site are listed on Annex I of the Birds Directive.

Rockabill to Dalkey Island SAC [003000]

This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands. Reefs are subject to strong tidal currents with an abundant supply of suspended matter resulting in good representation of filter feeding fauna such as sponges, anemones and echinoderms. The area selected for designation represents a key habitat for the Annex II species Harbour Porpoise within the Irish Sea. The species occurs year-round within the site and comparatively high group sizes have been recorded. Porpoises with young (i.e. calves) are observed at favourable. The selected site contains a wide array of habitats believed to be important for Harbour Porpoise including inshore shallow sand and mudbanks and rocky reefs scoured by strong current flow. The site also supports Common Seal and Grey Seal, for which terrestrial haul-out sites occur in immediate proximity to the site. Bottlenose Dolphins has also occasionally been recorded in the area. A number of other marine mammals have been recorded in this area including Minke, Fin and Killer Whales and Risso's and Common Dolphins. This site is of conservation importance for reefs, listed on Annex I, and Harbour Porpoise, listed on Annex II, of the Habitats Directive.

Howth Head Coast SPA [004113]

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian rock of the Bray Group, the most conspicuous component being quartzite. The site comprises the sea cliffs extending from just east of the Nose of Howth to the tip of the Bailey Lighthouse peninsula. The marine area to a distance of 500 m from the cliff base is included within the site. The cliffs vary from between about 60 m and 90 m in height, and in places comprise fairly sheer, exposed rock face. Howth Head Coast SPA is of high ornithological importance as it supports a nationally important population of Kittiwake. It is also a traditional nesting site for Peregrine Falcon, a species that is listed on Annex I of the Birds Directive. The site is easily accessible and has important amenity and educational value due to its proximity to Dublin City.

Howth Head SAC [000202]

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian slates and quartzites, joined to the mainland by a post-glacial raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places. A mosaic of heathland vegetation occurs on the slopes above the sea cliffs and in the area of the summit along with some areas of bare rock. A number of Red Data Book plant species, the latter five of which are legally protected under the Flora (Protection) Order, 1999, have been recorded at this site – Green-winged Orchid (*Orchis morio*), Bird's-foot (*Ornithopus perpusillus*), Hairy Violet (*Viola hirta*), Rough Poppy (*Papaver hybridum*), Pennyroyal (*Mentha pulegium*), Heath Cudweed (*Omalotheca sylvatica*) and Betony (*Stachys officinalis*). Howth Head displays a fine range of natural habitats, including two Annex I habitats, within surprisingly close proximity to Dublin city. The site is also of scientific importance for its seabird colonies, invertebrates and lichens. It also supports populations of at least two legally protected plant species and several other scarce plants.

Ireland's Eye SPA [004117]

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian rock of the Bray Group, the most conspicuous component being quartzite. The site comprises the sea cliffs extending from just east of the Nose of Howth to the tip of the Bailey Lighthouse peninsula. The marine area to a distance of 500 m from the cliff base is included within the site.

Ireland's Eye SAC [002193]

Ireland's Eye is located about 1.5 km north of Howth in Co. Dublin. It is a Cambrian island with quartzite which forms spectacular cliffs on the north-east side. Elsewhere much of the area is covered by drift. There is a Martello tower at the west end of the island and an ancient ruined church in the middle. A small area of shingle vegetation occurs above the sandy beach at Carrigeen Bay on the western side of the island. The rare Sea-kale (*Crambe maritima*), a characteristic species of this habitat, has been known from this site since 1894 and was recorded as recently as 1981. Sea-kale is listed as threatened in the Irish Red Data Book. Also occurring on the sandy/ shingle beach is the Red Data Book species Henbane (*Hyoscyamus nig*er). Irelands's Eye is of national importance for breeding seabirds.

8.4.4 Nationally Designated Sites

Only two of the seven pNHAs found in the Zone of Influence has a site synopsis. The descriptions of the other five pNHAs, Baldoyle Bay pNHA, Howth Head pNHA, Ireland's Eye pNHA, North Dublin Bay pNHA and the South Dublin Bay pNHA are considered to be similar to those described in the sections above relating to the Baldoyle Bay SAC/SPA, Howth Head (coast) SAC/SPA, Ireland's Eye SAC/SPA, and South Dublin Bay (and River Tolka) SAC/SPA.

Dalkey Coastal Zone and Killiney Hill [001206]

This site includes the coastal stretch from Scotman's Bay to south of White Rock, the Dalkey Island group and Dalkey Sound, and Killiney Hill. Killiney Hill is at the edge of the Wicklow mountain intrusion and so it is formed of a mixture of granite and mica schist. The seaward parts of Killiney Hill have in addition a covering of calcareous glacial drift. The rocky shore is mainly of granite. Dalkey Sound and its environs have been highly regarded as a valuable marine collecting area for many years. The Sound is especially noteworthy for the occurrence of west and south coast invertebrates. The area is also noted for the occurrence of gymnoblastic hydroids, with the rare *Antedon bifida* being taken regularly. Some rare European species which occur are members of the Order Nudibranchia and the Spiny Starfish (*Marthasterias glacialis*). Dalkey Island lies c. 400m off Sorrento Point. The island is low-lying, the highest point at c.15m is dominated by a Martello Tower. Lamb Island lies to the north of Dalkey Island, attached at low-tide by a line of rocks Further north lies Maiden Rock, a bare angular granite rock up to 5m high. Muglins, a small granite rock, lies about 1km north-east of Dalkey Island. A small lighthouse is on the rock. Herring Gulls nest on Dalkey Island, Lamb Island and Muglins. Great Black-backed Gull nests on Dalkey Island, and two pairs of Lesser Black-backed Gull nested there in 1981. Common Terns breed annually on Maiden Rock. One pair of Arctic Tern bred on Maiden Rock in several years. Manx Shearwater is suspected of breeding on Dalkey Island. Shelduck, Mallard and Oystercatcher nest on Dalkey and Lamb Island. Meadow and Rock Pipits breed on Dalkey Island. Maiden Rock is an important autumn roosting site for up to 2,000 terns, including Roseates from the Rockabill colony. In autumn and winter Dalkey Island is an evening roosting site for Cormorants, Shags, Curlew and large

gulls. Turnstones and Purple Sandpipers occur in winter. Killiney Hill is a complex of coastal heath and mixed woodland. The woods are mostly planted and include Sycamore (*Acer pseudoplatanus*), and Horse Chestnut (*Aesculus hipposcastanum*). Many of the rock surfaces on the open and bushy areas on the east side of the summit of the hill are roches mountonnes while near the summit spodumene is found in a small scarp exposure. This results in an interesting flora. The drift banks above and below the railway have warm shallow soils. Here grow scarce plants such as Bloody Crane's-bill (*Geranium sanguineum*), Bee Orchid (*Ophrys apifera*), Sea Stork's-bill (*Erodium maritimum*) and clovers (*Trifolium ornithopodioides, T. striatum and T. scabrum*). Up to five pairs of Fulmar breed on the cliffs below the railway line. Kestrel breeds in the area, as well as Stonechat. This site represents a fine example of a coastal system with habitats ranging from the sub-littoral to coastal heath. The flora is well developed and includes some scarce species. The islands are important bird sites. The site also has geological importance.

Dolphins, Dublin Docks pNHA [000201]

Both Common Tern and Arctic Tern breed in the Dublin Docks, on a man-made mooring structures known as 'dolphins'. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007. South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other breeding sites, perhaps outside the state.

8.4.5 Other designated Sites

Sandymount Strand and Tolka Estuary Ramsar site

This Ramsar site is an intertidal system supporting a large bed of Eelgrass (*Zostera noltii*) with extensive areas of sandflats. The site is important for various species of waterbirds, supporting internationally important numbers of Brent Geese and large numbers of roosting gulls and terns. Various species of annelids, bivalves and small gastropods occur. Bait-digging is a regular activity on the sandy flats.

North Bull Island Ramsar site

A small island built up over 200 years against a harbour wall and the adjoining foreshore of sandy beaches, saltmarshes and mudflats. The site is unique in Ireland because it supports well-developed saltmarsh and dune systems displaying all stages of development from the earliest phase of colonization to full maturity. The site supports five protected or threatened plant species and nationally important populations of three insect species. The area is important for nesting Sterna albifrons (80 pairs, or about 30% of the Irish population) and for numerous species of wintering waterbirds. Human activities include bait digging.

Baldoyle Bay Ramsar site

This estuarine system fed by two small rivers, the Mayne and the Sluice, is separated from the sea by a major sand dune peninsula. It is part of the Dublin Bay wetlands complex. In the inner estuary there are extensive beds of common cord-grass, while seawards vast mudflats are exposed at low tide. These characteristic habitats provide good quality feeding areas and roost sites for a wide range of birds such as the regionally threatened pale-bellied brent goose (*Branta bernicla hrota*), which winters there, and the nationally threatened Eurasian oystercatcher (*Haematopus ostralegus*). The area surrounding Baldoyle Bay is densely populated, and most of the dunes sheltering the Site are now used as a golf course. The main threats to the Site include the disturbance to wildfowl by the high number of visitors, and the dumping of spoil onto the foreshore. Besides recreation and research, the Site is important for erosion protection and flood control.

North Dublin Bay MPA

See descriptions from North Bull Island SPA, North Bull Island Ramsar site and North Dublin Bay SAC.

The North Bull Island Wildfowl Sanctuary

See descriptions from North Bull Island SPA, North Bull Island Ramsar site and North Dublin Bay SAC.

Dublin Bay UNESCO Biosphere Reserve

In 1981, UNESCO recognised the importance of Dublin Bay by designating North Bull Island as a Biosphere Reserve because of its rare and internationally important habitats and species. To support sustainable development, UNESCO's concept of a Biosphere has evolved to include not just areas of ecological value but also the areas around them and the communities that live and work within these areas. There have since been additional international and national designations, covering much of Dublin Bay, to ensure the protection of its water quality and biodiversity. To fulfil these broader management aims for the ecosystem, the Biosphere was expanded in 2015. The Biosphere now covers Dublin Bay, reflecting its significant environmental, economic, cultural and tourism importance, and extends to over 300 km².

Dublin Bay Important Bird Area

Dublin Bay is designated as an Important Bird Area (IBA) by BirdLife International. IBAs are monitored using a simple, practical and robust framework. This involves regular assessments in which each IBA is scored using populations of trigger species. Population species estimates for previous monitoring are given as 'good' for this site. Dublin Bay is a wetland of international importance for waterfowl, regularly supporting over 20,000 wintering birds. Species wintering in numbers of national importance include Shelduck (1,119 birds, 1995), Wigeon (1,270 birds, 1995), Teal (1,490 birds, 1995), Pintail (414 birds, 1995), Shoveler (370 birds, 1995), Grey Plover (914 birds, 1995), Sanderling (450 birds, 1995) and Black-tailed Godwit (466 birds, 1995). During August, large numbers of terns (typically about 5,000 and occasionally up to 30,000 birds) use Sandymount Strand as an evening roost.

8.4.6 Rare and Protected Species

This section lists the rare and protected species of flora and fauna recorded in the desk study.

National Parks & Wildlife Service Data

Records of rare and protected species from within the 10 km grid square O22 in which the site of the proposed development is located were provided by the NPWS and are listed in Table 8-6 below.

Table 8-18 Records for rare and protected species. Source: NPWS (2022).

Common Name	Scientific Name	Status*
Mammals		
Badger	*Meles meles*	WA
Hedgehog	*Erinaceus eeuropaeus*	WA
Irish Hare	*Lepus timidus hibernicus*	WA, HD V
Otter	*Lutra lutra*	WA, HD II, IV
Red Squirrel	*Sciurus vulgaris*	WA
Sika Deer	*Cervus nippon*	WA
Whiskered Bat	*Myotis mystacinus*	WA, HD IV
Amphibians & Reptiles		
Common Frog	*Rana temporaria*	WA, HD V
Plants		
Basil Thyme	*Clinopodium acinos*	FPO
Borrer's Saltmarsh-grass	*Puccinellia fasciculata*	FPO
Red Hemp-nettle	*Galeopsis angustifolia*	FPO
Small Cudweed	*Filago minima*	FPO
Lesser Snapdragon	*Misopates orontium*	FPO

**Status (listing conferring protection or describing conservation status) abbreviations: Annex II/IV/V (non-avian species) = Habitats Directive (HD); WA = Wildlife Act, 1976 (as amended); FPO = Flora (Protection) Order, 2015.*

National Biodiversity Data Centre Database

Table 8-7 lists the rare and protected species records obtained from the NBDC within the 2 km of the proposed development. To avoid replication, all records of species represented in the NPWS dataset have been removed from the displayed NBDC data. Only those bird species which are listed on Annex I to the Birds Directive and/or are Amber- or Red-listed *Birds of Conservation Concern in Ireland* (BoCCI) 2020- 2026, and/or are raptors have been listed here. Table 8-8 lists the invasive species recorded within 2km of the proposed development.

Table 8-19 Records for rare and protected species. Source: NBDC (2021).

Common name	Scientific name	Status*
Mammals		
Bottle-nosed Dolphin	*Tursiops truncatus*	WA, HD II, IV
Common Dolphin	*Delphinus delphis*	WA, HD IV
Common Pipistrelle	*Pipistrellus pipistrellus*	WA, HD IV
Common Porpoise	*Phocoena phocoena*	WA, HD II, IV
Common Seal	*Phoca vitulina*	WA, HD II, V
Daubenton's Bat	*Myotis daubentonii*	WA, HD IV
Grey Seal	*Halichoerus grypus*	WA, HD II, IV,
Leisler's Bat	*Nyctalus leisleri*	WA, HD IV
Pygmy Shrew	*Sorex minutus*	WA
Soprano Pipistrelle	*Pipistrellus pygmaeus*	WA, HD IV
Amphibians and Reptiles		
Smooth Newt	*Lissotriton vulgaris*	WA
Invertebrates		
Marsh Fritillary	*Euphydryas aurinia*	HD II
Birds		
Arctic Tern	*Sterna paradisaea*	BD I, Amber
Barn Owl	*Tyto alba*	Red
Barn Swallow	*Hirundo rustica*	Amber
Bar-tailed Godwit	*Limosa lapponica*	BD I, Amber
Black Guillemot	*Cepphus grylle*	Amber
Black Tern	*Chlidonias niger*	BD I, Amber
Black-headed Gull	*Larus ridibundus*	Red
Black-legged Kittiwake	*Rissa tridactyla*	Amber
Black-necked Grebe	*Podiceps nigricollis*	Red
Black-tailed Godwit	*Limosa limo*	Amber
Brent Goose	*Branta bernicla*	Amber
Coot	*Fulica atra*	Amber
Curlew	*Numenius arquata*	Red
Dunlin	*Calidris alpina*	BD I, Amber
Goldeneye	*Bucephala clangula*	Amber
Golden Plover	*Pluvialis apricaria*	BD I, Red
Grasshopper	*Locustella naevia*	Amber

Common name	Scientific name	Status*
Great Black-backed Gull	*Larus marinus*	Amber
Great Cormorant	*Phalacrocorax carbo)*	Amber
Great Crested Grebe	*Podiceps cristatus*	Amber
Great Northern Diver	*Gavia immer*	BD I
Grey Plover	*Pluvialis squatarola*	Amber
Greenshank	*Tringa nebularia*	Amber
Guillemot	*Uria aalge*	Amber
Herring Gull	*Larus argentatus*	Red
House Martin	*Delichon urbicum*	Amber
House Sparrow	*Passer domesticus*	Amber
Kentish Plover	*Charadrius alexandrinus*	BD I
Kingfisher	*Alcedo atthis*	BD I, Amber
Lesser Black-backed Gull	*Larus fuscus*	Amber
Linnet	*Carduelis cannabina*	Amber
Little Egret	*Egretta garzetta*	BD I
Little Grebe	*Tachybaptus ruficollis*	Amber
Little Gull	*Larus minutus*	BD I
Mallard	*Anas platyrhynchos*	Amber
Manx Shearwater	*Puffinus puffinus*	Amber
Mediterranean Gull	*Larus melanocephalus*	BD I, Amber
Merlin	*Falco columbarius*	BD I, Amber
Mew Gull	*Larus canus*	Amber
Mute Swan	*Cygnus olor*	Amber
Northern Gannet	*Morus bassanus*	Amber
Northern Lapwing	*Vanellus vanellus*	Red
Northern Shoveler	*Anas clypeata*	Red
Northern Wheatear	*Oenanthe oenanthe*	Amber
Oystercatcher	*Haematopus ostralegus*	Amber
Peregrine Falcon	*Falco peregrinus*	BD I
Razorbill	*Alca torda*	Amber
Red Knot	*Calidris canutus*	Red
Red-necked Phalarope	*Phalaropus lobatus*	BD I, Red
Redshank	*Tringa totanus*	Red
Red-throated Diver	*Gavia stellata*	BD I, Amber

Common name	Scientific name	Status*
Ringed Plover	*Charadrius hiaticula*	Amber
Sandpiper	*Actitis hypoleucos*	Amber
Scoter	*Melanitta nigra*	Red
Shag	*Phalacrocorax aristotelis*	Amber
Shelduck	*Tadorna tadorna*	Amber
Snipe	*Gallinago gallinago*	Amber
Starling	*Sturnus vulgaris*	Amber
Swift	*Apus apus*	Amber
Teal	*Anas crecca*	Amber
Tern	*Sterna hirundo*	BD I, Amber
Wigeon	*Anas penelope*	BD II, Amber
Wood Pigeon	*Columba palumbus*	BD I

**Status (listing conferring protection or describing conservation status) abbreviations: Annex II/IV/V (non-avian species) = Habitats Directive (HD); Annex I = Birds Directive (BD); WA = Wildlife Acts and Red/Amber = Birds of Conservation Concern in Ireland 2020-2026 (Gilbert et al., 2021).*

Table 8-20 Records of Invasive species. Source: NBDC (2021)

Common name	Scientific name
Giant Hogweed	*Heracleum mantegazzianum*
Grey Squirrel	*Sciurus carolinensis*
Harlequin Ladybird	*Harmonia axyridis*
Japanese Knotweed	*Fallopia japonica*
Japanese Skeleton Shrimp	*Caprella mutica*
Stalked Sea Squirt	*Styela clava*
New Zealand Pigmyweed	*Crassula helmsii*
Three-cornered Garlic	*Allium triquetrum*
Wakame	*Undaria pinnatifida*

Habitats

The habitat survey carried out to inform the *Ecological Impact Statement for residential development,* Dalguise *House, Monkstown, Co. Dublin* (Openfield, 2020) identified the following habitats:

- BL3 - Buildings and artificial surfaces
- FW1 – Eroding/upland rivers
- GA2 – Amenity grassland (improved)
- WD2 – Mixed broadleaved/conifer woodland
- WL2 – Treelines

No Annex I habitats were identified.

Otter

There are two records within the last seven years of Otter within 2km of the proposed development (NBDC, 2021). these records are from Dublin Bay and Dun Laoghaire Harbour. No evidence of Otter was recorded during the surveys undertake in 2020 to inform the *Ecological Impact Statement for residential development, Dalguise House, Monkstown, Co. Dublin* (Openfield, 2020).

Badger

No evidence of Badger was recorded during the surveys carried out to inform the initial *Ecological Impact Statement for residential development, Dalguise House, Monkstown, Co. Dublin* (Openfield, 2020).

Bats

A number of bat surveys were carried out on the site to inform *A bat impact assessment of Dalguise House and surrounding lands, Monkstown Rd, Monkstown, Dun Laoghaire/Rathdown, co. Dublin and potential impacts of the proposed development* (Wildlife Surveys. 2018). The summary provided within this report states the following:

"*A survey of Dalguise House, outbuildings and lands to the south of the house provided evidence of repeat common pipistrelle activity and occasional Leisler's bat activity. Bat activity did not indicate large numbers of bats and it is probable that individual bats are here for extended periods rather than a large number of bats. One mating roost was found in a tree close to the pedestrian path at the main entrance leading to Dalguise House. A number of mature trees have good potential for roosting bats including the mating perch beech, an oak tree and other beech trees. Large conifers within the site offer good cover but are much less suitable as roosts"*

"None of the buildings showed evidence of bats but are considered to offer the highest potential within this area."

Two bat species, Leisler's Bat and Common Pipistrelle, were recorded during these surveys.

Birds

A breeding bird survey was carried out to inform the *Ecological Impact Statement for residential development, Dalguise House, Monkstown, Co. Dublin* (Openfield, 2020). The following species were recorded displaying nesting/breeding behaviour within the study area during the survey:

- Magpie (*Pica pica*)
- Wood Pigeon (*Columba palumbus*)
- Hooded Crow (*corvus cornix*)
- Blackbird (*Turdus merula*)
- Blue Tit (*Cyanistes caeruleus*)
- Coal Tit (*Periparus ater*)
- Great Tit (*Parus major*)
- Grey Heron (*Ardea cinerea*)

The report also stated the following observations in relation to birds:

"Suitable nesting habitat is available for common garden birds in treelines, woodland and areas of horticultural shrubs. There is no suitable habitat which are of high conservation concern."

"While the Grey Heron is subject to no special protection measures, and is not a species of conservation concern, these nesting sites are usual features in a suburban context. In total, four nests were observed – three clustered in three separate Pine trees along the western boundary, and one in a Beech trees close to the Stradbrook Stream. The three nests along the western boundary complimented by a further three nests which are located outside the site boundary, in a tall Pine tree located in the neighbouring residential estate."

Wintering bird surveys were carried out at the site of the proposed development in 2020 and 2021 by Enviroguide (2021). The following species were recorded during these surveys:

- Herring Gull (*Larus argentatus*)
- Grey Heron (*Ardea cinerea*)
- Robin (*Erithacus rubecula)*
- Wren (*Troglodytes troglodytes*)
- Goldfinch (*Carduelis carduelis*)
- Dunnock (*Prunella modularis)*
- Blue Tit (*Cyanistes caeruleus*)
- Great Tit (*Parus major)*
- Coal Tit (*Periparus ater*)
- Long-tailed Tit (*Aegithalos caudatus*)
- Magpie (*Pica pica*)
- Hooded Crow (*Corvus cornix)*
- Wood Pigeon (*Columba palumbus*)
- Blackbird (*Turdus merula*)
- Mistle Thrush (*Turdus viscivorus)*
- Raven (*Corvus corax)*
- Sparrowhawk (*Accipiter nisus*)
- Buzzard (*Buteo buteo*)

It was noted in the report (Enviroguide, 2021) that "*Grey Heron (Ardea cinerea) which are known to nest in mature pine* trees *along the western Site boundary, were observed standing on the front lawns with a peak count of 10 Heron recorded on 12/02/2021*"

In relation to the use of the site by wintering birds, the report states:

"*The initial assessment of the quality and composition of the habitats present at the Site confirmed that it is unsuitable as an ex-situ feeding/roosting resource for the aforementioned SCI species i.e., geese, waders, and shorebirds. The fragmented nature of the grassland component of the Site does not provide any potential feeding resource for the above groups, of which the majority favour coastal habitats, or open green spaces such as those of playing pitches, maintained greens and golf courses. In addition, the relatively enclosed nature of the Site due to the mature treelines that form its margins, further renders it unsuitable for species such as Brent Geese, which tend to favour sites with open, unobstructed views of their surroundings (Pers. Observ.); likely to limit the potential for predation and provide ample room for landing and flight take-off. It is therefore concluded that there will be no loss of any ex-situ foraging/roosting habitat, to any of the SCI species listed for the relevant SPAs, as a result of the Proposed Developments*."

Other Mammals, Reptiles and Amphibians

No evidence of other protected mammals was recorded during the surveys carried out to inform the *Ecological Impact Statement for residential development, Dalguise House, Monkstown, Co. Dublin* (Openfield, 2020).

Openfield (2020) also states that the site does not provide suitable habitat for amphibians.

Invasive Species

Grey Squirrel (*Sciurus carolinensis*) has been recorded within the site of the proposed development (Openfield, 2020).

EPA and WFD Watercourse Assessments

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (the Water Framework Directive or 'WFD') requires that each Member State protect and improve water quality in all waters so that good ecological status is achieved. Additionally, proposed actions (within discrete River Basin Management Plans) are also required, to secure national natural water resources for the future. The EPA is the competent authority responsible for monitoring, protecting, and improving the water environment in the Republic of Ireland.

In accordance with WFD guidelines, water quality 'Status' is assigned using a variety of available data on aquatic flora and fauna (including fish), the availability of nutrients, and aspects like salinity, temperature and pollution by chemical pollutants. Morphological features, such as quantity, water flow, water depths and structures of the riverbeds, are also taken into account.

The original EPA water quality classification system (the 'Quality Rating System' or 'Q-values') is also used to assess water quality in Irish rivers, taking into account aquatic macrophytes,

phytobenthos and hydromorphology. The Quality Rating System has been shown to be a robust and sensitive measure of riverine water quality and has been linked with both chemical status and land-use pressures in catchments. Individual macroinvertebrate species are ranked for their sensitivity to organic pollution and the Q-value is assessed based, primarily, on their relative abundance within a biological sample. A review of both the internal EPA Q-value status and WFD surface water status for the relevant watercourses was undertaken.

The EPA's online map viewer provides access to information at individual waterbody level in Ireland. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters) or to groundwater. The Stradbrook Stream is not monitored by the EPA and no Q-values are available, however the stream has been assigned a River Waterbody WFD Status of 'Moderate' using expert judgement. The Dublin Bay Coastal Waterbody has been given a WFD status of 'Good' and a WFD Score of 'Not at Risk', The Liffey Estuary Transitional Waterbody has a WFD status of 'Good' and a WFD Risk Score of 'Not at Risk', the Tolka Estuary Transitional Waterbody has a WFD status of 'Moderate' and a WFD Score of 'At Risk', and the North Bull Island Transitional Waterbody has a WFD status of 'Moderate' and a WFD Score of 'Review'.

8.5 Baseline Environment (Field Survey Results)

8.5.1 Habitats

The following section describes the habitats recorded during field surveys in 2021. A total of seven habitats were recorded within the study area. Table 8-9 lists the habitats recorded. Habitat mapping is presented in Appendix 8.2. Habitats were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000). The site contains linear woodlands that provide habitat for species and connectivity across a general inhospitable landscape, therefore 'Linear Woodlands' has been included as a KER.

Table 8-21 Habitats recorded within the study area

Habitat Name	Fossitt Code
Buildings and Artificial Surfaces	BL3
Eroding/Upland Rivers	FW1
Amenity Grassland (Improved)	GA2
Mixed Broadleaved/Conifer Woodland	WD2
Scattered Trees and Parkland	WD5
Ornamental/ Non-native Shrubs	WS3
Treelines	WL2

Buildings and artificial surfaces (BL3)

This habitat type includes the driveway, car parking, buildings, paths and a tennis court. Generally, built habitats are not considered of high ecological significance, but they have the potential to contain habitats for bats and birds including swifts.

Eroding/upland rivers (FW1)

This habitat type includes natural watercourses or sections of these, that are actively eroding, unstable and where there is little or no deposition of fine sediment. The Stradbrook Stream which flows along the northern boundary of the site is an eroding river.

Amenity grassland (improved) (GA2)

Amenity grasslands are heavily managed grasslands that are usually species poor and mowed to maintain a short sward. Amenity grasslands are found on all of the open lawns throughout the site of the proposed development. This habitat is species-poor and dominated by grasses, however species such as daisy (*Bellis perennis*) and Dandelion (*Taraxacum majus*).

Mixed broadleaved/conifer woodland (WD2)

This habitat includes woodland areas with mixed stands of broadleaved trees and conifers. There are two small areas of woodland within the site. One area of woodland extends along the northern boundary of the site and the other lies just west of the main house. The woodlands are made up of a variety of native tree species including Beech, Horse Chestnut, Yew, Holly, Scot's Pine, Ash, Oak, Hawthorn, Hazel, Whitebeam and Silver Birch as well, as a wide variety of non-native ornamental species such as Monterey Pine (*Cupressus*

macrocarpa), Lime (*Tilia x vulgare*), Laurel (*Punus lusitanica*), Layland Cypress (*Cupressus leylandii*), Norway Maple (*Acer platanoides*), Austrian Pine (*Pinus nigra*), Cherry (*Prunus avium*), Lawson Cypress (*Chamaecyparis lawsoniana*), Aspen (*Populus tremula*), Blue Gum (*Eucalyptus globulus*) and Himalayan Cedar (*Cedrus deodara*).

Scattered Trees and Parkland (WD5)

This category can be used in situations where scattered trees, standing alone or in small clusters, cover less than 30% of the total area under consideration but are a prominent structural or visual feature of the habitat. This usually occurs in areas of cultivated grassland, particularly amenity areas. This habitat has been created for amenity use in front of the main house, and as is typical for this setting, the trees species are generally exotics specimens. The walled garden also falls under this category, which contains fruit trees with less than 30% tree cover.

Ornamental/ Non-native Shrubs

This category is represented by formal shrub planting on the north side of the walled garden.

Treelines (WL2)

Treelines are narrow rows or single lines of trees that are typically planted along roads and property boundaries. Well established mature treelines are found throughout the site of the proposed development. The treelines are made up of a variety of tree species including Horse Chestnut and Scot's Pine as well, as a wide variety of non-native ornamental species such as Eucalyptus and Monterey Cypress. There is a total length of c. 950m of treelines throughout the site.

8.5.2 Fauna

Terrestrial Mammals

8.5.2.1 Otter

No evidence or signs of Otter was recorded, and this species is considered absent from the site of the proposed development. The Stradbrook Stream is a minor watercourse and is culverted for much of its length, therefore it is unlikely to support this species.

8.5.2.2 Badger

No evidence or signs of Badger was recorded, and this species is considered absent from the site of the proposed development.

8.5.2.3 Bats

Bat Suitability Assessment

A bat suitability assessment was conducted to identify built or natural features within close proximity to the construction envelope of the proposed development and which could provide negligible to high potential to support a bat roost. A total of 74 trees within the site were categorised as having 'low potential', and three trees were categorised as having 'moderate potential' to support roosting bats. The coach house and the lean-to the south of

the walled garden were categorised as having 'low potential' to support roosting bats. These trees and buildings are described in Table 8-10 below. A full list of the trees which were categorised as having 'low potential' are displayed in Appendix 8.3.

In advance of this planning application, several trees which were categorised as dangerous in the arborist's tree survey report were removed in order to make the site safe and as part routine estate maintenance. This included a tree (Tree 588) which was confirmed as a Leisler's mating perch in the previous application, and for which a licence to remove the tree was granted (DER-BAT-2020-28). Following consultation with the National Parks and Wildlife Service, a new licence to fell the tree was issued (DER-BAT-2022-65). This licence pertained to landscape maintenance works undertaken on site prior to and unrelated to this planning application. The tree was removed in June 2022.

Table 8-22 Structures and trees subject to emergence/ re-entry surveys

Building	Description	Bat Roost Suitability
Sycamore (677)	Very large tree (15m) with an enormous wound at the heart of the stem and lots of evidence of decay, located just west of the main house. The tree is surrounded by suitable foraging habitat for bats and is connected to other examples of foraging habitats via linear features such as treelines and hedgerows along property boundaries as well as the Stradbrook Stream.	Considering that this tree is of sufficient size and age to support Potential Roosting Features (PRFs), with some observable from the ground, and that the surrounding habitat is of good quality for foraging and commuting bats, this tree was categorised as having 'moderate potential' to support roosting bats.
Beech (697)	Very large and narrow tree (21m) with lots of visible holes, located on the eastern boundary of the site beside the driveway. The tree is surrounded by suitable foraging habitat for bats and is connected to other examples of foraging habitats via linear features such as treelines and hedgerows along property boundaries as well as the Stradbrook Stream.	Considering that this tree is of sufficient size and age to support PRFs, with some observable from the ground, and that the surrounding habitat is of good quality for foraging and commuting bats, this tree was categorised as having 'moderate potential' to support roosting bats.
Sycamore (568)	Very large tree (19m) with many visible open wounds, located at the north-eastern corner of the site. This tree is surrounded by suitable foraging habitat for bats and is connected to other examples of foraging habitats via linear features such as treelines and hedgerows along property boundaries as well as the Stradbrook Stream.	Considering that this tree is of sufficient size and age to support PRFs, with some observable from the ground, and that the surrounding habitat is of good quality for foraging and commuting bats, this tree was categorised as having 'moderate potential' to support roosting bats.

Building	Description	Bat Roost Suitability
Coach House	A line of two-story buildings with slate roofs on the south wester corner of the site. These buildings were in relatively good condition and were dry inside. The structure provided a number of openings that would allow bats to enter.	Considering that these buildings are infrequently used, have intact slate roofs with dry interiors as well as supporting some PRFs on the exterior of the building, and that the surrounding habitat is of good quality for foraging and commuting bats, this tree is considered to have **Low potential** to support roosting bats.

Emergence/ Re-entry Surveys

In accordance with Collins (2016), emergence and re-entry surveys were undertaken in August and September 2021 in suitable weather conditions. No bat roosts were recorded in any of the trees or buildings and no derogation licence is required as part of this application. Details of the surveys are presented in Table 8-11 below. The number of bat passes recorded on each survey is presented in Table 8-12.

Table 8-23 Dates of emergence and re-entry surveys

Date	Location	Start Time	End Time	Temperature (°C)	Weather
18/08/2021	Courtyard/ Outbuildings	04:34	06:15	13	Moderate to strong wind, 80% cloud cover, dry.
31/08/2021	Courtyard/ Outbuildings	20:07	21:50	16	Gentle breeze, 100% cloud cover, dry.
01/09/2021	Beech (697)	04:53	06:40	16	Light to moderate breeze, 90% cloud cover, dry.
01/09/2021	Sycamore (677)	05:00	06:40	16	Light to moderate breeze, 100% cloud cover, dry.
01/09/2021	Sycamore (568)	04:50	06:40	16	Light to moderate breeze, 100% cloud cover, dry.
29/09/2021	Beech (697)	19:05	20:30	12	Light breeze, 100% cloud cover, dry.
29/09/2021	Sycamore (677)	19:05	20:30	12	Light breeze, 100% cloud cover, dry.
29/09/2021	Sycamore (568)	19:07	20:30	12	Light breeze, 100% cloud cover, dry.

Table 8-24 Emergence/ re-entry surveys- no. of bat passes

	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Brown Long-eared Bat	*Myotis sp.*	*Pipistrellus spp.*
Sycamore (568)	-	21	-	-	-	-
Sycamore (677)	-	3	-	-	-	-
Beech (697)	-	9	-	-	-	-
Coach House	5	29	1	-	-	-
Row of Sheds	5	73	-	-	-	-

Static-detector Bat Surveys

Two static bat detectors were left on site between the 25th June and 9th July 2021. The total number of calls recorded at each location are presented in Table 8-13.

Table 8-25 Static surveys- no. of bat passes

	Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Brown Long-eared Bat	*Myotis sp.*	*Pipistrellus spp.*
Row of Sheds	288	281	3	3	1	16
Meadow (north)	106	320	1	-	1	67

Bats could be impacted by the proposed development, therefore 'Bats' have been included as a Key Ecological Receptor.

8.5.2.4 Birds

Details of the surveys are presented in Table 8-14 below.

Table 8-26 Breeding bird survey details

Date	Start	End	Weather Conditions
25th June 2021	08:20	09:30	Dry, Cloudy, 13°C
7th July 2021	08:30	09:30	Dry, Cloudy, 15°C

Eighteen species were recorded during the breeding bird surveys, including three amber listed species and one red listed species, which was recorded flying over the site. Table 8-15 lists the birds that were recorded during the breeding bird surveys as well as their breeding status. The breeding status of these species is as follows: Three species categorised as 'confirmed breeding', six were categorised as 'probable', and eight were 'possible'. Nine Grey Heron nests were recorded within the trees located along the western boundary of the site. Nesting was confirmed at four nests on the 31st March 2022. Birds could be impacted by the proposed development, therefore 'Birds' has been included as a Key Ecological Receptor.

Table 8-27 Bird species recorded during the surveys

Common name	Scientific name	Breeding Status	BoCCI Status (2020)
Blackbird	*Turdus merula*	Probable breeding	Green
Blackcap	*Sylvia atricapilla*	Possible breeder	Green
Blue Tit	*Cyanistes caerileus*	Possible breeder	Green
Bullfinch	*Pyrrhula pyrrhula*	Probable breeding	Green
Chaffinch	*Fringilla coelebs*	Probable breeding	Green
Dunnock	*Prunella modularis*	Possible breeder	Green
Feral Pigeon	*Columba livia*	Possible breeder	Green
Goldcrest	*Regulus regulus*	Possible breeder	Amber
Grey Heron	*Ardea cinerea*	Confirmed breeding	Green
Herring Gull	*Larus argentatus*	Possible breeder	Amber
Hooded Crow	*Corvus cornix*	Possible breeder	Green
Magpie	*Pica pica*	Confirmed breeding	Green
Robin	*Erithacus rubecula*	Probable breeding	Green
Sparrowhawk	*Accipiter nisus*	Probable breeding	Green
Starling	*Sturnus vulgaris*	Possible breeder	Amber
Swift	*Apus apus*	Flying Over	Red
Wood Pigeon	*Columba palumbus*	Probable breeding	Green
Wren	*Troglodytes troglodytes*	Confirmed breeding	Green

8.5.2.5 Other Mammals, Reptiles and Amphibians

Fox was regularly seen on the site and is common in suburban areas. No dens were identified on site. No rare or protected species other than those listed in the preceding sections were recorded.

8.5.2.6 Flora

No flora listed on the Flora Protection Order 2015 were recorded within the Study Area.

8.5.2.7 Invasive Species

Grey Squirrel (*Sciurus carolinensis*) and Three-cornered Garlic (*Allium triquetrum*) were recorded on the site. These species are listed on the Third Schedule to the Habitats Regulations. Grey Squirrel is highly mobile is common and widespread in Dublin and there is no effective mitigation for this species at the site level. Three-cornered Garlic is common in gardens, riverbanks, hedgerows and woodland. This species is located in the northeast corner of the site on the bank of the Stradbrook Stream. Two other species, Snowberry (*Symphoricarpos albus*) and Cherry Laurel (*Prunus laurocerasus*) were recorded on the site

of the proposed development. These species are common in suburban environments and parks and can negatively affect native habitats and species, however they are not subject to restrictions. The proposed development could result in the spread of Three-cornered Garlic, therefore 'invasive species' has been included as a Key Ecological Receptor.

8.5.2.8 Water Quality

The macroinvertebrate and water sampling were undertaken at the Stradbrook Stream on the 12th October 2021. The macroinvertebrate sampling followed the standard methodology used by the Environmental Protection Agency (EPA) as described in Toner *et al.* (2005). The survey was carried out during the optimum survey period (June-October) when flows are likely to be relatively low and temperatures highest. During the macroinvertebrate and water chemical survey, each sampling point was assigned an EPA Q-Value and a Water Framework Directive (WFD) Ecological Status (Table 8-16). The results from both sampling points indicate that the water quality is poor, which is illustrated by the chemical analysis, freshwater macroinvertebrate species assemblage and the presence of sewage fungus. Watercourses are sensitive to pollution and sedimentation and can act as a conduit for pollutants and invasive species to spread. Therefore, 'the Stradbrook Stream' has been included as a Key Ecological Receptor.

Table 8-28 Water Quality Results

Watercourse	Q-Value	WFD Ecological Status
Stradbrook Stream (Upstream)	Q3	Poor
Stradbrook Stream (Downstream)	Q3	Poor

8.6 Key Ecological Receptors

This section provides details of the Key Ecological Receptors that were identified during the desk study and the subsequent field surveys. Table 8-17 below presents a list, description, and evaluation of the Key Ecological Receptors.

Table 8-29 Evaluation of Ecological Receptors for the Proposed Development

Ecological Receptor	Description	Evaluation of importance, following TII (2009)
KER 1 European Designated Sites	There are 12 European sites within the Zone of Influence, eight of which are hydrologically connected to the proposed development.	**International Importance** on the basis that these sites are designated as Special Areas of Conservations (SAC) or Special Protection Areas (SPA).
KER 2 Nationally Designated Sites	There are seven pNHAs located within the Zone of Influence which are hydrologically connected to the proposed development. These sites provide a range of marine and coastal habitats and supports important assemblages of rare and protected species.	**National Importance** on the basis that these sites are designated as proposed Natural Heritage Areas (pNHA).
KER 3 Internationally Designated Sites	There are ten internationally designated sites such as Ramsar sites, Marine Protected Areas (MPAs) and Wildfowl Sanctuaries located within the Zone of Influence which are hydrologically connected to the proposed development. Theses designated sites support important assemblages of rare and protected species and habitats, some of which are listed on Annex I to the Habitats Directive.	**International Importance** on the basis that these sites are designated as Ramsar sites, Marine Protected Areas (MPAs) and Wildfowl Sanctuaries.
KER 4 Linear Woodland	Linear woodlands are found throughout the site of the proposed development. The linear woodlands are a semi-natural habitat in an otherwise managed and urbanised landscape and contain a range of native species. These woodlands provide suitable habitat for a range of species including bats and breeding birds.	**Local Importance (Higher Value)** on the basis that linear woodland on site is of high biodiversity value in the local context.
KER 5 Bats	Bats and their roosts are protected wherever they occur, and the habitats found within and adjacent to the study area provide high-quality commuting and foraging habitat. Bats are vulnerable to habitat loss, especially the loss of roosting habitat.	**Local Importance (Higher Value)** as these species are listed on Annex IV to the Habitats Directive and protected under the Wildlife Act and are present within the study area.
KER 6 Birds	Over 20 species that have been recorded at the site of the proposed development, including Red and Amber listed species. The heronry on site is of significant ornithological interest.	**County Importance** on the basis that there is a heronry within and adjacent to the site of the proposed development.
KER 7 Invasive Species	Three-cornered Garlic was recorded along the Stradbrook Stream (ITM 722851 728549).	Invasive plants have the potential to impact negatively on biodiversity locally.

Ecological Receptor	Description	Evaluation of importance, following TII (2009)
KER 8 Stradbrook Stream	The Stradbrook Stream flows along the northern boundary of the site. The shallow channel has some natural unmanaged banks at this location that form an important natural aquatic habitat for native plants, insects, birds and mammals.	**Local Importance (Higher Value)** on the basis that the Stradbrook Stream is of high biodiversity value in the local context.

8.6 Potential Impacts of the Proposed Development

8.7.1 Effects on European Sites

The proposed development is hydrologically connected to eight European sites. As likely significant effects could not be excluded at the screening stage, a Natura Impact Statement (NIS) has been prepared. The NIS presents all of the predicted effects on these sites and their Qualifying Interests and also provides a detailed analysis and evaluation of these effects in the context of the relevant Conservation Objectives. The NIS also prescribes mitigation measures to address any adverse effects identified. As such, there is some overlap between this chapter of the EIAR and the NIS for the proposed development. However, both the EIAR and NIS for the proposed development are standalone documents which do not rely on each other. Impacts on the relevant European sites are dealt with under Key Ecological Receptor 6 'European Designated Sites'.

8.7.2 General Impacts on Key Ecological Receptors

8.7.2.1 Habitat Loss

The design of the proposed development has been undertaken in consultation with an Arborist with a view to retaining as many mature trees as possible. Nevertheless, the proposed development will lead to habitat loss in order to facilitate the construction of the buildings, roads, paths and services.

8.7.2.2 Habitat Fragmentation

The loss of linear woodland will result in habitat fragmentation which could lead to the displacement of wildlife from the area, abandonment of bat roosts and the fracture of an ecological corridor which will inhibit the movement of species through the area and into more natural refuges along the corridor.

8.7.2.3 Habitat Degradation

The construction and operation of the proposed development could lead to habitat degradation. The potential impacts include the pollution of the Stradbrook Stream, the conversion of woodland habitats to built land, highly modified amenity grasslands and parkland, and the addition of artificial lighting which may illuminate these habitats during the night.

Water quality impacts arising from both the construction and the operation of the proposed development have the potential to affect habitats and species directly and indirectly. Accidental pollution events could result in sediment and pollutants entering the Stradbrook Stream which discharges into Dublin Bay.

Increased storm water overflow incidences at Ringsend Wastewater Treatment Plant (WwTP) as a result of the proposed development could also result in increased pollutants entering Dublin Bay. Ringsend WwTP is currently operating at levels in excess of its intended design capacity and is therefore not in compliance with the European Union's Urban Wastewater Treatment Directive. Irish Water have begun to upgrade the current infrastructure to achieve compliance with the Urban Wastewater Treatment Directive (91/271/EEC), with aims to have these works completed in 2025. Under the existing scenario i.e. without consideration of the planned upgrade, wastewater will be conveyed from the proposed development to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP.

8.7.2.4 Disturbance

Construction of the proposed development will result in temporary noise, vibration, lighting and visual disturbance and will affect species both within outside the construction footprint. In addition to this, proposed boundary walls will create and exclusion barrier for species within and adjacent to the site.

The operation of the proposed development will lead to an increase in disturbance though the movement of people and vehicles and through the introduction of artificial lighting.

8.7.2.5 Direct Mortality

Direct mortality is possible as a result of site clearance, tree felling and vegetation removal. Birds are particularly vulnerable during the nesting season (March-August inclusive) when works could lead to the loss of nests.

During the operational phase of the proposed development, the windows of the buildings could lead to bird mortality through collision. The risk of this depends on a variety of factors including the local bird population density and the species present, landscape conditions and the building design.

Increased traffic as a result of the proposed development will also increase likelihood of vehicular collisions with wildlife. It is not considered, however, that this presents a significant negative effect for any of the Key Ecological Receptors identified, as the traffic will be slow moving.

8.7.2.6 Spread of Invasive Species

Construction activities could aid the spread of invasive species (Three-cornered Garlic) within the site. In the absence of control measures, there is a possibility that this species may be inadvertently spread during construction, through the movement of equipment and contaminated soil within the site.

8.7.3 Impacts on Key Ecological Receptors

Table 8-18 below describes the likely impacts from the proposed development on each of the Key Ecological Receptors.

Table 8-30 Characterisation and evaluation of likely impacts on Key Ecological Receptors, following EPA (2022) and TII (2009)

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
KER 1 European Designated Sites	• Habitat degradation	• Habitat degradation	**Construction & Operational Phase** Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on European Designated Sites downstream of the proposed development.
KER 2 Nationally Designated Sites	• Habitat degradation	• Habitat degradation	**Construction & Operational Phase** Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the National Level** on Nationally Designated Sites downstream of the proposed development.
KER 3 Internationally Designated Sites	• Habitat degradation	• Habitat degradation	**Construction & Operational Phase** Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on Internationally Designated Sites downstream of the proposed development.
KER 4 Linear Woodland	• Habitat Loss	• Habitat degradation	**Construction Phase** The permanent loss of linear woodland would constitute a **Permanent Slight Negative Impact at the Local Level.** **Operational Phase** Habitat degradation as a result of increased human presence and artificial lighting during the operational phase of the proposed development constitutes **Permanent Slight Negative Impacts at the Local Level.**
KER 5 Bats	• Habitat loss • Habitat degradation • Habitat fragmentation • Disturbance	• Habitat degradation • Disturbance	**Construction Phase** The permanent loss, degradation and fragmentation of habitat would constitute a **Permanent Moderate Negative Impact at the Local Level.** Disturbance during the construction phase would constitute a **Short-term Moderate Negative Impact at the Local Level.**

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
			Operational Phase Habitat degradation and disturbance as a result of noise, increased human presence and artificial lighting during the operational phase would constitute a **Permanent Moderate Negative Impact at the Local Level.**
KER 6 Birds	• Habitat loss • Habitat degradation • Disturbance	• Habitat degradation • Disturbance • Direct Mortality	**Construction Phase** The permanent loss and degradation of habitat would constitute a **Permanent Moderate Negative Impact at the County Level.** Disturbance during the construction phase would constitute a **Short-term Moderate Negative Impact at the County Level.** **Operational Phase** Habitat degradation and disturbance as a result of noise, increased human presence and artificial lighting during the operational phase would constitute a **Permanent Moderate Negative Impact at the Local Level.**
KER 7 Invasive Species	• Spread of invasive species.	• Spread of invasive species.	The construction and operation of the proposed development may lead to the spread of Three-cornered Garlic. It is considered that the spread of this invasive species is a permanent significant negative impact at the local level. It is considered that without mitigation, invasive species have the potential to lead to significant impacts at the local level.
KER 8 Stradbrook Stream	• Habitat degradation	• Habitat degradation	**Construction Phase** Water quality impacts which could arise in the event of accidental pollution from the proposed development has the potential to constitute **Short-term Significant Negative Impact at the local level.** **Operational Phase** The reduction in water quality in the Stradbrook Stream is considered to constitute a **Permanent Moderate Impact at the Local Level.**

8.8 Mitigation

This section describes the measures that are in place to mitigate any harmful or negative impacts associated with the proposed development and the identified Key Ecological Receptors, as described in the preceding sections. Construction phase mitigation measures are described first, followed by general mitigation measures which will apply during the construction and operational phases. Lastly, mitigation measures which relates specifically to the Key Ecological Receptors is described.

The proposed development has been developed having regard to EU and Irish legislation and all relevant guidelines in relation to ecology and engineering best practice for the planning and construction. These guidelines provide practical measures that can be incorporated into the design to minimise impacts and protect the receiving environment. The design has followed the basic principles outlined above to eliminate the potential for ecological impacts, where possible, and to minimise such impacts where total elimination is not possible. The design has followed the TII Publications (Standards) and the TII Environmental Assessment and Construction Guidelines.

8.8.1 Construction Phase Mitigation

The following general mitigation measures will be employed to minimise potential significant negative effects on biodiversity which might arise during the construction of the proposed development.

- **B_1** The contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this chapter are implemented during the construction phase. The EcoW will have at least five years' experience in ecological consultancy. The contractor will also appoint a bat specialist who holds NPWS licences to disturb bat roosts and handle bats in the course of normal survey work. The EcoW and the bat specialist role may be undertaken by the same person provided they have the necessary qualifications and experience.
- **B_2** Any lighting being used at night on site during construction should be considerate of the impacts it might have on nocturnal species in the area. The lights will not be left on overnight. If lighting is required during construction the lights will only be illuminating work areas when necessary and will avoid illuminating any woodland habitats and trees.
- **B_3** Trees which are being retained will be protected by fencing in accordance with BS 5837:2012, as defined in the '*Tree Survey, Arboricultural Impact Assessment and Tree Protection Scheme to BS 5837:2012*' report, which is included as part of the planning application. See Part 5 – Tree Protection Scheme of the report for full descriptions of the tree protection measures that will be implemented during the construction phase of the proposed development. An Arborist be retained as required by the principal contractor to monitor and advise on any works within the Root Protection Area (RPA) of retained trees to ensure successful tree retention and planning compliance. All recommendations contained in the '*Tree Survey, Arboricultural Impact Assessment and Tree Protection Scheme to BS 5837:2012*' will be followed.

- **B_4** The mitigation measures presented in other chapters of this EIAR, including, but not limited to Chapter 10 'Hydrology' and Chapter 13 'Landscape and Visual' will be implemented in full.

- **B_5** All works in proximity to the Stradbrook Stream will follow best practice guidance, as per the following documents:
    - *Guidelines for the crossing of Watercourses During Construction of National Road Schemes* (TII, 2008); and,
    - *Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters* (IFI, 2016).
    - *C532 Control of water pollution from construction sites: guidance for consultants and contractors* (CIRIA, 2001).

The following mitigation measures relating to the protection of water quality will apply during the construction and operation of the proposed development:

- **B_6** No instream works will be carried out as part of the proposed development, other than the removal of block walls and other river channel improvement measures.
- **B_7** Double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential silt or sediment run-off
- **B_8** Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse ,in order to minimize sources of sediment runoff.
- **B_9** Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations.
- **B_10** In order to limit the potential for pollution due to run-off from construction, all run off waters will be directed through sedimentation ponds prior to discharge. These ponds will be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to pond and suspended solids are allowed to settle.

The following measures prescribed regarding surface water run-off will also minimise the risk of any input of cementitious material into the Stradbrook Stream:

- **B_11** When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used;
- **B_12** Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near the watercourses;
- **B_13** Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified Environmental Manager;

- **B_14** There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering watercourses ;
- **B_15** Concrete waste and wash-down water will be contained and managed on site to prevent pollution of the watercourses;
- **B_16** On-site concrete batching and mixing activities will only be allowed at the identified construction compound;
- **B_17** Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier);
- **B_18** Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival on site; and,
- **B-19** Chute washout locations will be provided with appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.
- **B_20** Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager and were necessary the relevant Environmental Specialist. All method statements for works in, near or liable to impact on a waterway must have prior agreement with IFI and NPWS.

The measures prescribed regarding surface water run-off will also minimise the risk of any input of hydrocarbons and other chemicals into the Stradbrook Stream. However, the following additional measures shall also apply:

- **B_21** Surface runoff from the compound will be minimised by ensuring that the paved/ impervious area is minimised. All surface water runoff will be intercepted and directed to appropriate treatment systems (settlement facilities and oil trap) for the removal of pollutants and/or silt prior to discharge. The site compound will be fenced off as part of the site establishment period.
- **B_22** Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage.
- **B_23** Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).
- **B_24** Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.

Given the full and proper implementation of these water quality protection measures, the construction, operation, and maintenance of the proposed development will not give rise to significant effects.

8.8.2 Non-specific Mitigation Measures

The following is an overview of the non-specific mitigation measures that will be employed to avoid or reduce significant impacts on the Key Ecological Receptors:

8.8.2.1 Landscaping

- **B_25** The landscape design has been carefully co-ordinated to retain as many high-value trees as possible. There are currently 346 No. trees on the proposed development site. 95 No. trees will be lost to the proposed development. Of these 95 No. trees, 68 No. are considered to be low-quality trees (Category 'C') representing 72% of trees lost, 24 No. are good-quality trees (Category 'B'), representing 25% of trees lost and 3 No. are high-quality trees (Category 'A'), representing 3% of trees lost. There are 213 No. trees of high-quality and large girth standard proposed for planting in order to compensate for those lost. In addition, 109 Category 'R' trees will be lost. Category R trees are trees that are deemed to be of no value within 10 years of the assessment and should be removed. It should be noted that the 'value' of a tree in the arboricultural assessment is not comparable to the biodiversity value of a tree, and is in fact often the inverse, however, in general, Category A and B trees are large trees and of higher biodiversity value than smaller trees.
- **B_26** The Landscape design for the proposed development includes tree, shrub, climber, swale and marginal planting around the site. Species selected includes native and nectar rich flowering plants to increase the availability of nectar for pollinators, and indirectly food for bats and birds. These species include, but are not limited to: Dog rose (*Rosa canina*), Crab apple (*Malus sylvestris*), Creeping blue blossom (*Ceanothus thyrsiflorus var. repens*), Mexican orange blossom (*Choidya ternata*), Mountain hydrangea (*Hydrangea serrata*), Snowdrop (*Galanthus nivalis*), Snake's head fritillary (*Fritillaria meleagris*) and Common camas (*Camassia quamash*).
- **B_27** The landscape design includes an edible forest in the existing walled garden. This will mimic the stable ecosystem at the periphery of the site. The edible plants will be perennials specific to their location and climate and stacked in layers (eight layers in total). Each layer of this edible forest will have a high percentage of fruit, food and nut species. Species which will be planted includes: Sweet Chestnut (*Castanea sativa*), Walnut (*Juglans regia*), Plum (*Prunus domestica*), Apple (*Malus domestica*), Rosemary (*Rosmarinus officionalis*), Wild strawberry (*Fragaria vesca*), Wild garlic (*Allium ursinum*) and Blackberries (*Rubus allegheniensis*).
- **B_28** The landscape design also includes a pond on the western boundary. The pond has been designed to hold water year-round and have deeper areas to provide habitat for a range of freshwater species. The edges of the pond will be planted with native riparian species such as Purple loosestrife (*Lythrum salicaria*), Yellow flag iris (*Iris pseudacorus*) and Soft rush (*Juncus effusus*).
- **B_29** No laurel-leaved evergreens will be planted. This includes Cherry Laurel.
- **B_30** Three trees will be retained as ecopoles (Table 8-19). Transforming the trees into ecopoles will involve removing the tree crown to a set height and using veteranisation techniques to create features that mimic an ancient tree. These techniques will create habitats for fungi, insects, birds and bats. Techniques include:
    - Coronette cutting of the main trunk, approx. 3 m high.

- Vertical cuts & crevices
- Hollows
- Wounds

Table 8-19 Trees being retained as Ecopoles.

Tree No.	Location within the site	Species	Current Height
634	NW corner of site	Sycamore	15m
737	Most SE corner of site	Norway Maple	7 m
770	Southern boundary	Scots Elm	13 m

8.8.2.2 Lighting

- **B_31** The public lighting has been designed will comply with the following:
  - Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2013, P4.
  - Bollard lighting will be used in wooded areas which will avoid light spill above the horizontal.
  - Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns.
  - Lighting will be LED and have no upward light spill (apart from intentional up-lighting) and a sharp horizontal cut off.
  - Lighting will be a warm-white colour of 2700K or less.
  - There will be no lighting on the pond.
  - Up-lighting will be limited to discreet points of interest.

8.8.2.3 Water Quality

- **B_32** During the operational phase, rainwater from the roofs and roads will be conveyed directly to a surface water drainage system (designed following SUDS principles), which will include a petrol interceptor, a pond, swales and rain gardens, and attenuation tanks.
- **B_33** Measures will be employed to improve the physical characteristics of the Stradbrook Stream. The location of these measures will be limited to the south bank of the river which is within the ownership of the Applicant. The measures will include the removal of block walls which were constructed to form the bank, the setting back of mesh fencing. The riverbank will be regraded to provide a more natural channel. The regrading of the bank will need to be cognisant of, and may be restricted by, the root protection zones of trees. The use of coir or similar may be required to prevent erosion while natural vegetation becomes established.

8.8.3 Specific Mitigation Measures

8.8.3.1 Bats (KER 5)

In addition to the non-specific mitigation measures listed in 8.8.1 and 8.8.2, the following specific mitigation measures apply:

- **B_34** A pre-construction bat suitability assessment will be carried out prior to site clearance. Any moderate or high potential features will be examined by a suitably qualified bat specialist to ensure no bats are present.
- **B_35** A suitably qualified bat specialist is required to supervise the felling of all trees and the demolition of any buildings classified as having low to moderate suitability for supporting bat roosts, and which may contain features invisible from ground level. If any bats are found, they will be removed by the bat specialist and placed in a box and released on site at dusk.
- **B_36** Following the completion of the elements of the construction phase which could lead to the disturbance of a bat roost (to be dictated by the EcoW), twenty-six bat boxes will be placed on mature trees that will be retained. Twenty-six equates to one bat box for every tree and building with' low potential', and three bat boxes for every tree with 'moderate potential'. Schwegler type crevice bat boxes (available from www.nhbs.com) that are self-cleaning will be used. The bat boxes will be positioned by a suitably qualified bat specialist to maximise the likelihood of use.
- **B_37** These bat boxes will be protected during the construction phase of the project through the establishment of Root Protection Areas and any artificial lighting that will be used during this phase of the proposed development will avoid illuminating any of these trees at night.
- **B_38** The felling of trees and demolition of outbuildings will take place in the months of September to November inclusive, or in February and March in order to avoid the months when bats are most sensitive to disturbance. Note that this programme must also consider the presence of nesting birds.
- **B_39** The final lighting plan for the proposed development will be designed in accordance with *Bats and Lighting in the UK* (BCT, 2018). The design should consider this and only have as much lighting as necessary and should not exceed the baseline requirements.

8.8.3.2 Birds (KER 6)

In addition to the non-specific mitigation measures listed in 8.8.1 and 8.8.2, the following specific mitigation measures apply to this KER:

- **B_40** Site clearance during construction and tree and shrub maintenance during operation will take place outside the nesting bird season (1st March - 31st August inclusive). If site clearance is required during the nesting bird season, the area will be checked by a suitably qualified ecologist. If nesting birds are found to be present, the site clearance works will cease until the chicks have fledged, or, until the NPWS have been consulted to determine the course of action.
- **B_41** In order to protect the heronry from disturbance which could lead to nest abandonment, no site clearance works will commence during the pre-nesting and

nesting season (February- July). The absence of active nests will be confirmed by the ECoW.

- **B_42** A Grey Heron Conservation Plan has been developed to ensure the protection of Grey Heron within the site and will be followed during both construction and operational phases of the proposed development. This Conservation Plan can be found in Appendix 8.4.
- **B_43** Fencing will be erected around the trees containing the heronry within the site as part of the tree protection plan. These will also serve to reduce disturbance close to the trees. The tree protection fencing will be retained for the duration of the construction phase.
- **B_44** Bird-friendly glass (e.g. ornilux) will be used on all windows, doors and glass facades in the new development which will increase the reflectivity of the windows and significantly reduce the risk of collision.
- **B_45** Twenty-five no. bird boxes will be erected.
- **B_46** Five no. 17A Schwegler Swift Nest Boxes (triple cavity) will be incorporated into the development. These will be positioned on the north faces of the buildings out of the prevailing wind and at least 4.5m high. The type and position should be confirmed by the ECoW. *Notes on the Common Swift and Setting up nest boxes* (Linda Huxley, 2014) provides guidance on setting up swift boxes.
- **B_47** Two No. Grey wagtail / Dipper nest boxes will be provided under the newly constructed bridge over the Stradbrook Stream.
- **B_48** All bird boxes will be positioned by the ECoW to maximise the likelihood of use.
- **B_49** The heronry will be surveyed during the breeding season for three consecutive years. The tree number of each tree containing a nest will be recorded (using the numbering convention in the tree report for this application), and any signs of activity will also be recorded. The results will be sent to the NPWS and Dún Laoghaire Rathdown County Council following each survey. Should a noticeable decline in the heronry be discovered, protective measures will be put in place, in consultation with the NPWS.

8.8.3.3 Invasive Species (KER 7)

- **B_50** An Invasive Species Control and Management Plan has been developed in accordance with objective GIB28 of the County Development Plan (DLRCC, 2022) and can be found in Appendix 8.5. This management plan will be followed during construction to ensure invasive species are eradicated from the site and that all works shall be executed in accordance with best practice for biosecurity in construction.
- **B_51** All plant and equipment employed on the construction site (e.g. excavators) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of IAPS.
- **B_52** All washing must be undertaken in areas with no potential to result in the spread of IAPS, as detailed in the Construction Environmental Management Plan.
- **B_53** Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.
- **B_54** In advance of the works, the extent of Three-cornered Garlic established will be fenced off. Under the direction of the ECoW, the bulbs will be excavated by hand to avoid damaging the roots of nearby trees.

- **B_55** The bulbs will be broken up using a spade and buried on site to a minimum depth of 1 m.
- **B_56** The site will be resurveyed the following year to check if any plants have re-established. If Three-cornered Garlic is found, the process will be repeated until none re-appear.
- **B_57** If the infestation of Three-cornered Garlic cannot be eradicated prior to construction, it should be fenced off at the outset and the access prohibited except for monitoring for treatment purposes. All site staff shall be made aware of the Contractor's Biosecurity Protocol and receive training in the importance of good site biosecurity.

8.9 Residual Impacts on Key Ecological Receptors

Table 8-19 below asses the significance of the residual impacts on the Key Ecological Receptors following the inclusion of the mitigation measures described in Section 8.9.

Table 8-31 Assessment of significance of residual impacts, following EPA (2022) and TII (2009)

Key Ecological Receptor	Pre-mitigation impacts	Ecological significance following mitigation
KER 1 European Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on European Designated Sites downstream of the proposed development	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Imperceptible Impacts at the International Level** on European Designated Sites downstream of the proposed development
KER 2 Nationally Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the National Level** on Nationally Designated Sites downstream of the proposed development.	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Imperceptible Impacts at the National Level** on Nationally Designated Sites downstream of the proposed development.
KER 3 Internationally Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on Internationally Designated Sites downstream of the proposed development.	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Imperceptible Impacts at the International Level** on Internationally Designated Sites downstream of the proposed development.
KER 4 Linear Woodland	The permanent loss of linear woodland would constitute a **Permanent Very Significant Negative Impact at the Local Level.** Habitat degradation as a result of increased human presence and artificial lighting during the operational phase of the proposed development constitutes **Permanent Significant Negative Impacts at the Local Level.**	The permanent loss of linear woodland would constitute a **Permanent Moderate Negative Impact at the Local Level.** Habitat degradation as a result of increased human presence and artificial lighting during the operational phase of the proposed development constitutes **Permanent Slight Negative Impacts at the Local Level.**
KER 5 Bats	The permanent loss, degradation and fragmentation of habitat would constitute a **Permanent Moderate Negative Impact at the Local Level.** Disturbance during the construction phase would constitute a **Short-term Moderate Negative Impact at the Local Level.** Habitat degradation and disturbance as a result of noise, increased human presence and artificial lighting during the operational phase would constitute a **Permanent Moderate Negative Impact at the Local Level.**	The permanent loss, degradation and fragmentation of habitat would constitute a **Permanent Slight Negative Impact at the Local Level.** Disturbance during the construction phase would constitute a **Short-term Slight Negative Impact at the Local Level.** Habitat degradation and disturbance as a result of noise, increased human presence and artificial lighting during the operational phase would constitute a **Permanent Slight Negative Impact at the Local Level.**

Key Ecological Receptor	Pre-mitigation impacts	Ecological significance following mitigation
KER 6 Birds	The permanent loss and degradation of habitat would constitute a **Permanent Moderate Negative Impact at the County Level.** Disturbance during the construction phase would constitute a **Short-term Moderate Negative Impact at the County Level.** Habitat degradation and disturbance as a result of noise, increased human presence and artificial lighting during the operational phase would constitute a **Permanent Moderate Negative Impact at the Local Level.**	The permanent loss and degradation of habitat would constitute a **Permanent Slight Negative Impact at the County Level.** Disturbance during the construction phase would constitute a **Short-term Slight Negative Impact at the County Level.** Habitat degradation and disturbance as a result of noise, increased human presence and artificial lighting during the operational phase would constitute a **Permanent Slight Negative Impact at the Local Level.**
KER 7 Invasive Species	The spread of invasive species.	The management of invasive species is considered to constitute a **permanent significant positive impact at the local level**.
KER 8 Stradbrook Stream	Water quality impacts which could arise in the event of accidental pollution from the proposed development could constitute **Short-term Significant Negative Impact at the local level.** The reduction in water quality in the Stradbrook Stream is considered to constitute a **Permanent Moderate Negative Impact at the Local Level.**	Water quality impacts which could arise in the event of accidental pollution from the proposed development could constitute **Short-term Significant Negative Impact at the local level.** The reduction in water quality in the Stradbrook Stream is considered to constitute a **Permanent Imperceptible Impact at the Local Level.**

8.10 Monitoring

Preconstruction Surveys will be carried out in accordance with Section 8.8 of this Chapter. The contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this chapter are implemented during the construction phase.

8.11 Reinstatement

No reinstatement works are required for ecological features.

8.12 Interactions

The preparation of this Biodiversity Chapter involved collaboration and discussion with the project team, particularly in relation to the following Chapters:

8.12.1 Chapter 9 Land, Soils, Geology, Hydrogeology

The construction of the proposed development will require the excavation and importation of large amounts of material. This will lead to habitat loss and the potential for pollution within the site and outside the site. Following the implementation of the mitigation measures in Chapter 8 and 9, there will be no significant effect on the Key Ecological Receptors.

8.12.2 Chapter 10 Hydrology- Surface Water

There is potential for the construction and operation of the proposed development to lead to pollution of the Stradbrook Stream and connected habitats downstream. Following the implementation of the mitigation measures in Chapter 8 and 10, there will be no significant effect on the Key Ecological Receptors.

8.12.3 Chapter 12 Noise and Vibration

There is potential for the construction and operation of the proposed development to lead to increased disturbance. Following the implementation of the mitigation measures in Chapter 8 and 12, there will be no significant effect on the Key Ecological Receptors.

8.12.4 Chapter 13 Landscape and Visual

There is potential for the construction and operation of the proposed development to lead to habitat loss, habitat degradation, the introduction of species of low biodiversity value and the introduction of artificial lighting. Following the implementation of the mitigation measures in Chapter 8 and 13, there will be no significant effect on the Key Ecological Receptors.

8.12.5 Chapter 18 Material Assets- Waste Management

There is potential for the construction and operation of the proposed development to lead to pollution within the site and the wider environment. Following the

implementation of the mitigation measures in Chapter 8 and 18, there will be no significant effect on the Key Ecological Receptors.

8.12.6 Chapter 19 Material Assets- Built Services

There is potential for the construction and operation of the proposed development to lead to impacts on local biodiversity and downstream impacts on proximate watercourses and designated sites via excavation and installation works during the proposed implementation of infrastructure throughout the site. Following the implementation of the mitigation measures in Chapter 8 and 19, there will be no significant effect on the Key Ecological Receptors.

8.13 Assessment of Cumulative Impacts

Cumulative effects are those which accrue to Key Ecological Receptors as a result of incremental changes caused by other existing or proposed plans or projects together those caused by the proposed development.

A scoping exercise was first undertaken to identify an appropriate study area in respect of cumulative assessment. This comprised an initial survey of all planning applications within a spatial limit of c. 2km radius of the site boundary. A radius of c. 2km was selected for the reasons outlined in Chapter 21, Table 21.1.

For the purposes of this initial survey, a search of all planning applications which were recorded on the National Planning Applications Database (DoHPLG) with extant permissions or were otherwise under consideration at the time of writing were included.

A screening exercise was then undertaken to determine whether each identified project had the potential to generate cumulative impacts of significance on the environment, when considered in combination with the proposed development. There were two stages to this:

1. Identifying projects of a scale and nature ('major' projects) with the potential to generate cumulative impacts of significance (in line with the parameters set out in Table 21.1 below);
2. The record of applications resulting from (1) was further reviewed by the expert consultants to determine whether the identified 'major' projects, located within a 2km radius of the subject site, have the potential, in respect of each environmental aspect, to interact with the proposed development from a cumulative impact perspective.

Following the above screening exercise, a consolidated list of projects emerged, including both committed and planned projects that were determined to have the potential to give rise to cumulative impacts with the proposed development. Some of the projects were identified by more than one expert consultant whereas others were identified in relation to only one environmental aspect.

This final list was then distributed to the expert consultants undertaking the assessment of each environmental aspect. For completeness, despite the initial screening process, each chapter has regard to all of the projects identified in Chapter 3 (Sections 3.7.1 and 3.7.2).

For the purposes of this chapter, the cumulative impact assessment considers cumulative impacts on biodiversity which are:

(a) Likely;
(b) Significant; and
(c) Relating to a future event, reasonably foreseeable.

None of the developments identified during the cumulative assessment were determined to result in significant negative cumulative effects with regard to biodiversity, as defined in Chapter 21 Cumulative Impacts of this EIAR. This Chapter presents an in-depth assessment of potential cumulative effects.

8.14 The "Do-Nothing" Scenario

If the proposed development does not proceed, there will be no loss of the existing habitats on the site. There would be no increase in the noise and visual disturbance from construction traffic and the increase of pedestrian and motor traffic to the area in the long term. The current management of the site would continue i.e. as a private residence. It is likely that invasive species such as Snowberry and Cherry Laurel would continue to spread through the site.

8.15 Difficulties Encountered in Compiling this Chapter

Standard survey methods were followed, however a section of the Stradbrook Stream corridor was inaccessible due to dense vegetation and a steel grate across the stream. This area will not be directly impacted by the proposed development and therefore this limitation is not considered to be significant. No other difficulties were encountered during the completion of the surveys described above. However, any biases or limitations associated with these methods could potentially affect the results collected. While every effort was made to provide a full assessment and comprehensive description of the study area, ecological trends (e.g., population trends) may not be fully reflected due to the instantaneous/short-term nature of the field surveys. However, the data obtained from field surveys coupled with the desk study provides a robust representation of the baseline for the habitats and species within the Zone of Influence.

8.16 Conclusion

It is considered that, with the implementation of the mitigation measures set out in this Chapter and in the CEMP, the construction and operation of the proposed development will not have a significant negative impact on biodiversity in the Zone of Influence.

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9.0 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

9.1 Introduction

This Chapter describes the likely significant effects of the proposed Dalguise House Large-Scale Residential Development (the 'proposed development') on land, soils, geology, and hydrogeology. The following aspects have been considered relevant to this assessment:

- Design:
  - Design features of the proposed development that take into account the particular ground conditions, and the properties of the underlying soils and hydrogeology to ensure that works do not have any potentially significant impacts on land, soils, geology and hydrogeology.

- Construction:
  - Excavations, both above and below the water table, that will require special consideration in terms of both the stability of the excavations and the logistics required to facilitate the works. Additionally, disposal of surplus excavated material, including possible contaminated soils and groundwater, must be considered.

- Operation Phase:
  - The potential for contamination to soils, geology and hydrogeology from operational activities, although these are considered minimal.

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9.2 Methodology

9.2.1 Legislation

The main legislation which provides for hydrogeological protection in Ireland is the Water Framework Directive (WFD, 2000/60/EC) which establishes a legislative framework and regime which sets groundwater quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater.

Other legislation particularly relevant to the management of groundwater includes:

- The Groundwater Directive, 2006/118/EC.
- European Communities (Water Policy) Regulations 2014 (S.I. No. 350 of 2014).
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010), as amended by the European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2011 (S.I. No. 389 of 2011), the European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2012 (S.I. No. 149 of 2012) and the European Union Environmental Objectives (Groundwater) (Amendment) Regulations 2016 (S.I. NO. 366 of 2016).
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) as amended by the European Communities (Water Policy) (Amendment) Regulations, 2005 (S.I. No. 413 of 2005).
- European Communities (Water Policy) (Amendment) Regulations, 2008 (S.I. No. 219 of 2008).
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- EIA Directive and transposing regulations: Directive 2011/92/EU as amended by Directive 2014/52/EU
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018)
- Water Services Acts (2007-2019).

Despite the importance of soil, there is little in the way of direct EU or national legislation obliging Ireland to maintain soil quality, however indirectly issues such as contaminated land have been dealt with through other legislation (e.g. waste) including the 1996 Waste Management Act (as amended) and the EU Council Directive 99/31/EC (the Landfill Directive) on the landfilling of waste. In Ireland some soil protection legislation has been enacted including the 2011 EIA Regulations for On Farm Development which, include a requirement for EIA of soil operations such as soil drainage.

9.2.3 Policy

The *Dún Laoghaire-Rathdown County Development Plan 2022-2028* sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the county over the plan period. The plan sets out an approach centred on the core principle of sustainability with a focus on creating vibrant, liveable, climate resilient communities. The following policies are relevant in relation to this hydrology assessment:

> Policy Objective GIB26: Geological Sites. It is a Policy Objective to protect, promote and preserve sites of Geological and Geomorphological importance, in particular the proposed Natural Heritage Areas (NHAs), and any County Geological Sites (CGS), that become designated during the lifetime of the Plan.

Policy Objective EI8: Groundwater Protection and Appropriate Assessment. It is a Policy Objective to ensure the protection of the groundwater resources in and around the County and associated habitats and species in accordance with the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (Groundwater) Regulations, 2010. In this regard, the Council will support the implementation of Irish Water's Water Safety Plans to protect sources of public water supply and their contributing catchment.

9.2.3 Impact Assessment Guidance

The Land, Soils, Geology and Hydrogeology Chapter for this EIAR has been prepared in line with the suggested topics outlined in relation the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022) and guidance by the IEMA on the perspective of land and soil in an EIA ((IEMA), 2022), including 'land', 'soil', 'geology' and 'hydrogeology'. The topic of 'land' is defined in the Guidelines as 'related to issues of land take' and 'removal of productive land from potential agricultural or other beneficial use'. The suggested topic of 'agricultural capability' is not considered due to the nature of the study area as one of suburban development. According to (EPA, 2022), the topic of 'hydrogeology' is able to be covered under the 'Land and Soils' or the 'Water' chapters of the EIAR; the former (this chapter) is relevant in this case.

9.2.3.1 Assessment of Impacts to Land

With regards to land, the assessment presents the baseline land uses based upon information received from desk-based review. A review of the 'land take' associated with the proposed scheme is then reviewed, assessing the likely change from baseline conditions. Further mention of land zoning is included, and how this may be altered from the construction and operation of the Proposed Scheme.

Likely significant effects are categorised in accordance with the EPA 2022 Guidelines. Significant effects are assessed for the construction and operation phases and arise from direct, indirect, secondary and cumulative effects on environmental conditions. Significant effects can be positive, neutral or negative. These are outlined further below.

Table 9-32: Significance Criteria for Likely Significant Effects on Land

Significance Level	Criteria
Quality of Effects	
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the

	reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effect	
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics
Duration of Effect	
Momentary Effects	Effects lasting from seconds to minutes.
Brief Effects	Effects lasting less than a day.
Temporary Effects	Effects lasting less than a year.
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years.
Reversible Effects	Effects that can be undone, for example through remediation or restoration.

9.2.3.2 Assessment of Impacts to Soil, Geology & Hydrogeology

With regards to soils, geology and hydrogeology, the assessment presents the baseline conditions of these features based on readily available information and data provided during the course of the Project and determines how the construction and operation of the Project will cause potential impact to these features. The following guidance was used specifically in the assessment of impacts to soils, geology and hydrogeology:

- NRA (2009) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- IGI (2013) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.

The impact assessment ranking methodology and terminology used in this section is in line with Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009). A summary of the NRA (2008) methodology is provided in (IGI, 2013). The (NRA, 2009) impact assessment methodology provides a robust assessment for ranking potential impacts to geology, soil and hydrogeology and has been successfully adopted for environmental impact assessment outside of road sector projects in Ireland. The process is summarised as follows:

- Step 1: Quantify the 'Importance' of a feature for geology, soils and hydrogeology using criteria based on quality, significance, scale, and extent attributes for a feature. Importance is qualified in terms of 'low', 'medium', 'high', or 'very high' (see box 4.1, box 4.2 and box 4.3 in (NRA, 2009).
- Step 2: Estimate the 'Magnitude' of the impact on the feature from the proposed development using criteria based on degree of loss, change of gain in terms of volume, quality or integrity attributes for a feature. Magnitude of impact is qualified in terms of 'large', 'moderate', 'small', or 'negligible' as well as 'beneficial' or 'adverse' (see box 5.1, box 5.2 and box 5.3 in (NRA, 2009).
- Step 3: Determine the rating of 'Significance' of the impact using the matrix shown below using the outcome from steps 1 and 2 (see box 5.4 in (NRA, 2009). This is also provided in the tables below.

Table 9-33: Rating of Significant Environmental Impacts (NRA, 2009)

Importance of attribute	Magnitude of impact			
	Negligible	**Small**	**Moderate**	**Large**
Extremely High	Imperceptible	Significant	Profound	Profound
Very high	Imperceptible	Significant/ Moderate	Profound/ Significant	Profound
High	Imperceptible	Moderate/ Slight	Significant/ Moderate	Profound/ Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/ Moderate

Table 9-34: Criteria for Rating (NRA, 2009)

Importance	Criteria Description	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale.	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status.
Very high	Attribute has a high quality or value on a regional or national scale.	Regionally Important Aquifer with multiple wellfields Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale.	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers Locally important potable water source supplying >1000 homes Outer source protection area for regionally important water source Inner

		source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale.	Locally Important Aquifer Potable water source supplying >50 homes Outer source protection area for locally important water source.
Low	Attribute has a low quality or value on a local scale.	Poor Bedrock Aquifer Potable water source supplying.

The significance ranking is initially determined pre-mitigation (i.e. prior to the introduction of mitigation measures) and residual impacts are ranked based on the assumptions that all mitigation measures are adopted.

9.2.4 Data Sources

The appraisal of likely significant effects on land, soils, geology and hydrogeology was conducted through an initial desk-top review of the existing conditions within the study area. Baseline information was sourced from a number of secondary data resources including:

- Aerial Photography: Bing Maps and Google Maps (accessed 2022).
- Geological Survey of Ireland (GSI) (accessed 2022) Online map viewer and associated data products.
- Department of Communication, Climate Action and the Environment (2018, accessed 2022).
- Environmental Protection Agency (EPA) (2012, accessed 2022). EPA Maps, Corine Land Cover.
- EPA (accessed 2022). EPA Maps, GroundWater, Water Framework Directive.
- EPA. Office of Licensing and Permitting (EPA website, accessed 2022).
- GSI (2014). Directory of Active Quarries, Pits and Mines in Ireland (accessed 2022).
- Teagasc and the Environmental Protection Agency (EPA) (2017). Irish Soil Information System (accessed 2022).
- Exploration and Mining Division (EMD) data and map viewer.
- *Dún Laoghaire-Rathdown County Development Plan 2022-2028* (Dún Laoghaire-Rathdown County Council, 2022).
- *Dún Laoghaire-Rathdown County Development Plan 2022-2028* (Dun Laoighre Rathdown County Council, 2022).
- Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Residential Development Site at Dalguise House (Awn, 2020).
- Site Investigation Report (Ground Investigations Ireland, 2018).
- Ground Investigation Report (IGSL Ltd. (2022).

- Waste Characterisation Assessment (O'Callaghan Moran & Associates. (2022)).
- EIA Screening Report in respect of Lands at Dalguise House, Monstown Road, Monkstown (John Spain Associates, 2020).
- IEMA "A New Perspective on Land and Soil in Environmental Impact Assessment" ((IEMA), 2022).

9.2.5 Site Investigations and Project-Specific Reporting

A Site Investigation was undertaken by Ground Investigations Ireland in 2018 including Soakaways to determine soil infiltration (nos. 7), Cable Percussion Boreholes to a maximum depth of 6m below ground level (nos. 4) and installation of no. 1 groundwater monitoring well. Results are outlined in the Baseline Environment section.

Additional investigations were undertaken by IGSL in February (IGSL Ltd, 2022), with objectives to:

1. Ascertain the ground conditions at the site;
2. Identify suitable bearing strata for structural foundations;
3. Ascertain soil parameters for use in the design of roads and paved areas;
4. Determine the geometry of existing boundary wall foundations in selected locations;
5. Investigate the presence of soil contamination; and
6. Investigate the potential for sulphate attack on buried concrete.

The field work included the boring of 6 nos. cable percussive boreholes, rotary coreholes, trial pits, sampling, Plate Bearing Tests, foundation inspection pits and infiltration tests. Results are discussed in Section 9.3.

Direct reference has also been made to Project-specific reporting, including the Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Residential Development Site at Dalguise House prepared by Awn Consulting in 2020. Here, a Conceptual Site Model (CMS) was prepared to ascertain the potential impacts of the Project to hydrology and hydrogeology resources, the latter of which is used to inform the impact assessment of this Chapter.

9.3 Baseline Environment

9.3.1 Site Topography

The general topography of the site falls from south to north towards the Stradbrook stream. Levels vary in the region of 29.15m – 15.26m. The highest area in the site is the area surrounding Dalguise House and the lowest point on site is at the northern boundary adjacent to Stradbrook stream (ByrneLooby, 2022).

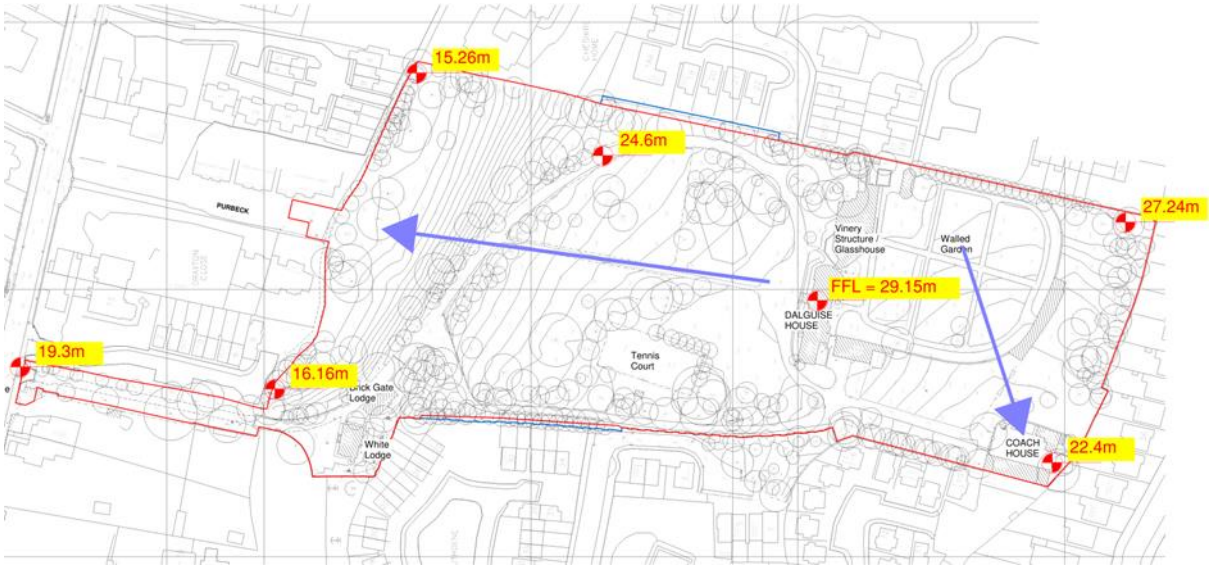

Figure 9-1: Topographical Survey with key levels highlighted (falls in site indicated) (ByrneLooby, 2022).

9.3.2 Land Zoning

The subject site is located in the Monkstown area of South County Dublin and falls within the administrative area of Dun Laoghaire Rathdown County Council (DLRCC). It extends to circa 3.57 ha and forms part of the wider curtilage of Dalguise House, a Protected Structure which is located approximately 80 metres south of the boundary of the subject site. A full description of the Project is provided in Chapter 5 – Description of Proposed Project.

In zoning the land for residential use under the *Dun Laoghaire Rathdown County Development Plan 2022-2028* (Dun Laoighre Rathdown County Council, 2022), the Planning Authority have assessed the nature of the site to ascertain its capacity to accommodate residential development and merit a zoning as designated.

The proposed development is compliant with the site's zoning 'Objective A' within the *Dun Laoghaire Rathdown Development Plan 2022-2028*, which seeks *"to provide residential development and/or protect and improve residential amenity".*

Currently, the site comprises Dalguise House, two gate lodges and a dwelling house, walled garden and associated buildings and garden lands. There is also a disused tennis court and swimming pool with associated structure. There is significant tree coverage (nos. 364) and walls surrounding the majority of the perimeter.

9.3.3 Bedrock Geology and Soils

9.3.3.1 Desk-based Information

The Geological Survey of Ireland GSI (2022) classifies the bedrock beneath the overall site and the surrounding area as Type 2p microcline porphyritic Formation which comprises Granite with microcline phenocrysts.

GSI data indicates that Quaternary geology in the study area is comprised of till derived from limestones and till derived from granites. Alluvium is reported in very small, dispersed patches.

The formations and lithological descriptions of geology within a 3km radius of the site are presented in the table below (GSI, 2022).

Table 9-35: Bedrock Geology in the Study Area

Formation	Lithology	System
Type 2p microcline porphyritic	Type 2p has in addition euhedral microcline phenocrysts up to 30mm. Accessory minerals are Fe-oxide, sphene, apatite, zircon, garnet and rutile.	Caledonian
Type 2e equigranular	Type 2e consists of quartz, plagioclase, microcline, muscovite and biotite with grainsize 1-5mm	Caledonian
Type 3 muscovite porphyritic	Type 3 is similar to type 2e with muscovite phenocrysts in addition, exceptionally up to 70mm across and accessory tourmaline and topaz.	Caledonian
Lucan Formation	The formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar.	Carboniferous, Dinantian (Series)

Teagasc (GSI, 2022) data indicates that soils in the study area are generally mineral soils, largely derived from mainly acidic parent materials. Soils range from shallow to deep and poorly to well drained, with the majority of soils present in the study reported to be well draining.

The GSI/ Teagasc (2022) mapping database of the quaternary sediments in the area of the subject site indicates the principal subsoil type in the study area is gravels derived from limestone (GLs), and the underlying subsoil namely made ground which reflects the urbanised land use in the immediate area.

9.3.3.1 Site Investigations

Initially, a Site Investigation was undertaken by Ground Investigations Ireland in 2018 including Soakaways to determine soil infiltration (nos. 7), Cable Percussion Boreholes to a maximum depth of 6m below ground level (nos. 4) and installation of no. 1 groundwater monitoring well (Ground Investigations Ireland, 2018).

The following describes the soils encountered on site:

- Generally, this found that the subsoil is relatively shallow and there are pockets of rock close to the surface.
- Topsoil: Topsoil was encountered in all the exploratory toles and was present to a maximum depth of 0.30m below ground level.
- Made Ground: Made ground deposits were encountered beneath the surfacing in BH03 and was present to a depth of 0.30m below ground level. These deposits were described generally as grey angular gravel fill.
- Cohesive Deposits: Cohesive deposits were encountered beneath the topsoil or made ground and described typically as brown/light brown slightly sandy gravelly clay with occasional cobbles overlying stiff brown/grey slightly sandy gravelly clay with mane cobbles.

Laboratory Testing was carried out on samples of the ground/soil on the site and the results have found that the soil material is above the inert limits as outlined within the European Council Directive 1999 131/EC Article 16 Annex II. No soil contamination was noted.

Follow up investigations conducted by ISGL Limited in February 2022 the following was noted (IGSL Ltd, 2022):

- The boreholes revealed firm to dark brown sandy clay (subsoil) extending to depths ranging from 0.7m to 2.9m, underlain by stiff (high strength (light brown sandy clay which was generally underlain by very stiff (very high strength (dark grey/brown sandy gravelly clay containing cobbles and boulders.
- Rock was identified as medium strong to strong fine to medium grained granite, fresh to moderately weathered (see table below).

Table 9-36: Cable Percussive Borehole Results

Location	Made Ground	Soft/Firm dark brown sandy clay	Stiff light brown sandy clay	Stiff to very stiff dark grey/brown sandy clay	Very stiff dark grey/brown sandy gravelly clay
BH01	1.60	1.60 to 2.90			2.90 to 5.30
BH02/2A	0.40	0.40 to 1.30	1.30 to 3.80	3.80 to 6.50	6.50 to 9.80
BH03		0.00 to 2.30	2.30 to 3.60		3.60 to 6.50
BH04		0.00 to 0.90	0.90 to 2.10		2.10 to 6.30
BH05		0.00 to 0.70	0.70 to 3.90		3.90 to 5.20
BH06		0.00 to 0.90	0.90 to 1.30	1.30 to 2.60	2.60 to 5.50

Table 9-37: Corehole Results

Location	Ground Level mOD	Weathered rock (Symmetrix) m bgl	Intact Rock (Cored) m bgl	Cored Depth m bgl	Rock Level (intact) m OD
RC02	22.76	10.50	11.70	15.00	11.06
RC03	27.94	15.40	16.00	17.00	11.94
RC04	27.23		15.00	16.00	12.23
RC05	25.92		13.75	15.00	12.17
RC06	24.05		11.00	12.00	13.05
RC07	22.38		11.20	12.30	11.18
RC08	18.36	5.30	6.00	9.00	12.36
RC09	14.00	4.20	4.50	7.50	9.50

A Waste Characterisation Assessment (WCA) was undertaken of samples of made ground and natural ground collected from six (6 No.) trial pits, six (6 No.) cable percussion and five (5 No.) window sample boreholes (O'Callaghan Moran & Associates, 2022). The samples were tested for a series of parameters including Total Heavy Metals, Total Organic Carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, Polychlorinated Biphenyls (PCB), Mineral Oil, Polyaromatic Hydrocarbons (PAH) and asbestos. Leachate generated

from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS). The results are presented in the table below. In summary, all results were classed as 'non-hazardous' and the appropriate Lift of Waste Code given is 17 05 04 (Soil and Stone). All samples met the inert Waste Acceptance Criteria (WAC). Further, no asbestos was detected in any of the samples.

Table 9-38: Waste Classification Assessment Results

Sample No.	Depth	Classification	LoW Code	Sample No.	Depth	Classification	LoW Code
BH01	1.0	Non-Hazardous	17 05 04	TP23	0.3	Non-Hazardous	17 05 04
BH01	2.0	Non-Hazardous	17 05 04	TP23	1.2	Non-Hazardous	17 05 04
BH02A	1.00	Non-Hazardous	17 05 04	TP23	2.4	Non-Hazardous	17 05 04
BH02A	2.0	Non-Hazardous	17 05 04	TP24	0.5	Non-Hazardous	17 05 04
BH02A	3.0	Non-Hazardous	17 05 04	TP24	2.0	Non-Hazardous	17 05 04
BH03	1.0	Non-Hazardous	17 05 04	TP25	0.6	Non-Hazardous	17 05 04
BH03	2.00	Non-Hazardous	17 05 04	TP25	1.5	Non-Hazardous	17 05 04
BH03	3.0	Non-Hazardous	17 05 04	TP26	0.5	Non-Hazardous	17 05 04
BH04	1.0	Non-Hazardous	17 05 04	TP26	1.6	Non-Hazardous	17 05 04
BH04	2.0	Non-Hazardous	17 05 04	WS01	0.0-1.0	Non-Hazardous	17 05 04
BH05	1.00	Non-Hazardous	17 05 04	WS01	1.0-2.0	Non-Hazardous	17 05 04
BH05	2.0	Non-Hazardous	17 05 04	WS02	0.0-1.0	Non-Hazardous	17 05 04
BH05	3.0	Non-Hazardous	17 05 04	WS02	1.0-2.0	Non-Hazardous	17 05 04
BH06	1.0	Non-Hazardous	17 05 04	WS03	0.0-1.0	Non-Hazardous	17 05 04
BH06	2.0	Non-Hazardous	17 05 04	WS03	1.0-2.0	Non-Hazardous	17 05 04
TP21	0.75	Non-Hazardous	17 05 04	WS03	2.0-3.0	Non-Hazardous	17 05 04
TP21	1.5	Non-Hazardous	17 05 04	WS04	0.0-1.0	Non-Hazardous	17 05 04
TP21	3.0	Non-Hazardous	17 05 04	WS04	1.0-2.0	Non-Hazardous	17 05 04
TP22	0.6	Non-Hazardous	17 05 04	WS05	0.0-1.0	Non-Hazardous	17 05 04
TP22	1.5	Non-Hazardous	17 05 04	WS05	1.0-2.0	Non-Hazardous	17 05 04
TP22	3.3	Non-Hazardous	17 05 04	WS05	2.0-3.0	Non-Hazardous	17 05 04

9.3.4 Karst Features

No karst features have been identified within a 3km radius of the proposed development.

9.3.5 Geo-heritage

GSI data indicates that there are no audited or unaudited sites of geological heritage in the study area.

9.3.6 Geohazards

GSI data indicates that there are no landslides reported from the area. The closest recorded event was on the M50 Motorway Ballinteer Interchange where an artificial slope collapsed at the edge of a carriageway due to heavy precipitation. (GSI map viewer, 2022).

9.3.7 Economic Geology

GSI data indicates that there are no active quarries or areas of active mineral exploitation within the study area.

9.3.8 Hydrogeology

9.3.8.1 Desk-based Information

GSI data indicates that there are no group scheme and public supply source protection areas or groundwater scheme abstraction points located in the study area, and no recorded groundwater wells and springs. (GSI, 2022)

Aquifer categories are intended to describe both resource potential (Regionally or Locally important, or Poor) and groundwater flow type and attenuation potential (through fissures, karst conduits or intergranular). The aquifer code is made up of the aquifer resource value and how the groundwater flows in the bedrock or sand & gravel aquifer. They are as follows (GSI, 2022).

Regionally Important (R) Aquifers:

- Karstified bedrock (Rk)
- Fissured bedrock (Rf)
- Extensive sand & gravel (Rg)

Locally Important (L) Aquifers:

- Sand & gravel (Lg)
- Bedrock which is Generally Moderately Productive (Lm)
- Bedrock which is karstified to a limited degree or limited area (Lk)
- Bedrock which is Moderately Productive only in Local Zones (Ll)

Poor (P) Aquifers:

- Bedrock which is Generally Unproductive except for Local Zones (Pl)
- Bedrock which is Generally Unproductive (Pu)

From the GSI (2022) National Bedrock Aquifer Map, the GSI classifies the bedrock aquifer beneath the subject site as a 'Poor aquifer (Pl), with bedrock which is generally unproductive except in local zones'.

The Water Framework Directive (WFD) risk status of groundwater bodies underlying the scheme is in review with the relevant statutory bodies The proposed development lies within the Kilcullen Groundwater Body (GWB, IE_EA_G_003). Presently, the groundwater body in the region of the site is classified under the WFD status 2010-2015 (EPA, 2022) as 'good'. The WFD risk score system indicates the GWB as 'not at risk'.

Table 9-39 Ground Waterbody WFD Status 2013–2018 for the study area

Chemical	Overall Groundwater Status	Quantitative Groundwater Status
Good	Good	Good

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. The GSI (2022) guidance presently classifies the bedrock aquifer vulnerability in the region of the subject site as 'moderate' which indicates a general thick overburden depth potential of 5-10m, indicating relatively good protection of the underlying aquifer by low permeability subsoil. The aquifer vulnerability class in the region of the site is presented in the figure below.

GSI data (2022) indicates that the subsoil permeability of the area is 'low' and that the groundwater recharge is 275mm/year (pre cap) with an 85% recharge coefficient.

Figure 9-2: Aquifer Vulnerability

9.3.8.2 Site Investigation

A Site Investigation was undertaken by Ground Investigations Ireland in 2018 including the installation of no. 1 groundwater monitoring well (Ground Investigations Ireland, 2018).

Groundwater strikes were noted for Boreholes No. 1 and 2, at 2.4m and 3.7m, rising to 2.10m and 2.70m in 20 minutes. It was noted in the Report (Ground Investigations Ireland, 2018) however in the report that the exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors. For this reason, a standpipe was installed at Borehole No. 1 to allow the equilibrium groundwater level to be determined. This is described below (Ground Investigations Ireland, 2018).

Table 9-9 Groundwater monitoring (Ground Investigations Ireland, 2018).

Date	Time	Groundwater Level (mBGL)
30/08/2018	8:00	2.40 m
05/03/2019	14:35	1.45 m
03/09/2019	8:00	2.52 m

BGL: Below Ground Level.

Further investigations were undertaken by IGSL Limited in February 2022. No groundwater ingress was observed to the bored depths. However, water was present in the boreholes at the end of the drilling. While this was mostly at depths greater than 10m BGL, two of the boreholes recorded standing water at depths of 3.1 and 3.2m BGL at the end of drilling (IGSL Ltd, 2022).

9.4 Potential Impacts of the Proposed Project

9.4.1 Construction Phase

9.4.1.1 Land

The land is currently allocated for residential use. The Project will not result in the 'take' of land which is currently utilised or has potential to be utilised for agricultural purposes or alternative uses. All construction will be confined to the development site, which is currently disused.

Currently, the site comprises Dalguise House, two gate lodges and a dwelling house, walled garden and associated buildings and garden lands. There is also a disused tennis court and swimming pool with associated structure. There is significant tree coverage (nos. 364) and walls surrounding the majority of the perimeter. The development will consist of the demolition and part-demolition of some of these existing structures (total demolition area 815 m^2), including the White Lodge a two-storey house (192 m^2), swimming pool extension to the southeast of Dalguise House (250 m^2), residential garage and shed to the southwest of

Dalguise House (285 m^2), lean-to structures to the south of the walled garden (13 m^2), part demolition of basement area at Dalguise House (8 m^2), part demolition at the Coach House (67 m^2), removal of a glasshouse, and alterations to and removal of sections of the walled garden.

A number of these will be demolished as part of the Project, including the White Lodge dwelling located at the site entrance, the swimming pool structure, the residential garage structure, some of the structures within the Stable Yard and some of the structures located to the south-west of the Dalguise House. These assets are currently disused, and their demolishment will result in the land being utilised for its intended purpose under '*Objective A*' of the *Dun Laoghaire Rathdown County Development Plan 2022-2028* (Dun Laoighre Rathdown County Council, 2022).

A direct, not significant positive impact is therefore assigned, with permanent effects.

9.4.1.2 Soils, Geology and Hydrogeology

The potential significant impacts on soils, geology and hydrogeology that could occur during the construction of the proposed scheme are:

- Potential impacts from import of contaminated soils, aggregates & materials.
- Potential impacts from encountering known or unknown existing contamination.
- Potential impacts of accidental leaks and spills.
- Potential impacts from excavation, loss of soil and bedrock exposure.
- Potential impact on locally important bedrock and/or gravel aquifer.
- Potential impact of soil compaction.
- Potential impact of dewatering.

These are discussed in detail in the following sections.

Import of Contaminated Soils, Aggregates & Materials

It is not expected that soil will be imported for construction purposes, but a limited amount of top-soil may be required for landscaping. The importation of such material may introduce contamination to the site if sourced from facilities where appropriate screening and due diligence has not been undertaken. However, where materials are imported onto site, it is envisaged that these will be sourced from reputable and licensed third parties, will be suitable for use and that all Waste Criteria Assessment (WCA) will have been undertaken to determine contamination potential. Accordingly, it is not anticipated that contaminated material derived for geology or soils will be imported to site.

In accordance with the impact assessment methodology outlined in Section 9.2.2, the importance of the feature is considered 'low' and the magnitude of impact is considered 'small

adverse' due to the quantities of top soil material required and likelihood of appropriate due diligence being undertaken regarding material sourcing.

Consequently, the overall significance rating of the potential impact is considered to be 'imperceptible'.

Encountering Existing Contamination

There is the potential for encountering known or unknown contamination at the surface or subsurface within the scheme area during construction. Potential impacts to geology, soils, or hydrogeology could occur through activities where there is:

- Direct movement of any contaminated materials on site, if present, during intrusive construction activities or during the movement of vehicles around site; or,
- Changes to the subsurface or surface that may create pathways, mobilisation and migration of contamination, if present, during intrusive construction activities.

Laboratory Testing was carried out on samples of the ground/soil on the site during Site Investigations in 2018 and 2022. The results have found that the soil material meets the inert Waste Acceptance Criteria (WAC) and is non-hazardous, therefore no existing soil contamination was noted (Ground Investigations Ireland, 2018) (IGSL Ltd, 2022).

Therefore, in accordance with the impact assessment methodology outlined in Section 9.2.2, the importance of the feature is considered 'medium' and the magnitude of impact is considered 'negligible' due to the lack of historical contamination evidence.

Consequently, the overall significance rating of the potential impact is considered to be 'imperceptible'.

Accidental Spills and Leaks

Leakage, accidental discharge or spillage of construction related materials, including fuels and lubricants from vehicles and equipment, on site can cause contamination in geology, soils and hydrogeology. These may occur through the following:

- Spillage or leakage of oils and fuels stored on site without proper controls in place (i.e., hard standing bunds, drainage).
- Spillage or leakage of oils and fuels from construction vehicles and plant where appropriate maintenance is not in place.
- Spillage of oil or fuel from refuelling of vehicles and plant where appropriate due diligence is not undertaken.
- Run-off from concrete or cement working areas during foundation construction.

The pre-mitigation significance ranking of potential impacts from accidental leaks and spills is dependent on the likelihood of the spill occurring, the physio-chemistry of the material released, the potential duration of the event, the potential volume of release, and the physio-chemical properties of underlying material (e.g. soils and geology). Potential impacts to hydrogeology also consider the nature of the underlying aquifers, aquifer connectivity and abstraction activities. Intrusive works during construction can potentially create pathways for any accidental releases in the vicinity of the works to reach the subsurface.

Works during the construction of the scheme could pose a threat to the quality of groundwater bodies within the study area chiefly through unplanned events such as leaks/spills/runoff/accidental release or escape of fuels, oils and lubricants, bulk liquid cement, contaminated leachate. Such leaks and spills could potentially occur at any location in the proposed development area where there is a potential source material for an accidental release. Potential significant impacts are leaks and spills leading to contamination of hydrogeology and negatively impacting the aquifer, or contamination of geology and soils.

Groundwater levels encountered during the Site Investigations (Ground Investigations Ireland, 2018) range from 1.45 m to 2.52 m, indicating a relatively high-water table. The bedrock aquifer beneath the subject site is defined as a 'Poor aquifer (Pl), with bedrock which is generally unproductive except in local zones' and has a vulnerability assigned as 'moderate' which indicates a general thick overburden depth potential of 5-10m, indicating relatively good protection of the underlying aquifer by low permeability subsoil. The proposed development lies within the Kilcullen Groundwater Body (GWB, IE_EA_G_003). Presently, the groundwater body in the region of the site is classified under the WFD status 2010-2015 (EPA, 2022) as 'good' and 'not at risk'. Under WFD requirements, the development of the scheme should incorporate measures not to worsen its status.

A Hydrological and Hydrogeological Qualitative Risk Assessment was prepared by AWN Consulting in 2020 including the completion of a Conceptual Site Model (CSM), evaluating the potential impact of accidental spills upon the underlying aquifer. A CSM allows possible Source Pathway Receptor (S-P-R) linkages to be identified and if no S-P-R linkages are identified, then there is no risk to identified receptors. Potential sources during the construction phases are considered, and for the purposes of undertaking the potential of any hydrological/hydrogeological S-P-R linkages, all potential sources of contamination are considered without taking account of any measures intended to avoid or reduce harmful effects of the proposed project (mitigation measures) i.e. a worst-case scenario.

The following sources are considered plausible for the proposed construction site:

- Accidental leakage may occur from construction site equipment. As a worst-case scenario an unmitigated leak of 300 litres is considered. This would be a single short-term event.
- Use of wet cement is a requirement during construction. Run-off water from recent cemented areas will result in highly alkaline water with high pH. As this would only occur during phases of work this is again considered as a single short-term event rather than an ongoing event.

- The demolition of the existing building units and construction requires soil excavation and removal and import. Unmitigated run-off could contain a high concentration of suspended solids during earthworks. These impacts could be considered as intermittent short-term events.

With regards to soils, geology and hydrogeology, the pathway considered includes the potential for vertical migration of any contaminants into the bedrock aquifer if significant reduced to the recorded 'moderate' vulnerability recorded at the site, which will result in the attenuation of any pollutants. The site is underlain by a Poor Aquifer (Ll) and as such, there is a low potential for offsite migration of any accidentally discharged contaminants within the bedrock.

The below summarises the plausible pollutant linkages (S-P-R) considered as part of the assessment as well as a review of the assessed risk to the geological and hydrogeological setting. Impacts of accidental leaks / spills to hydrology receptors (i.e., Stradbrook Stream, Dublin Bay) are considered in Chapter 10 Hydrology – Surface Water.

Table 9-10 Plausible Pollutant Linkages

Source	Pathways	Receptors Considered	Risk of Impact (without mitigation)
Unmitigated leak from a construction vehicle. Discharge to ground of runoff water with High pH from cement process.	Vertical with protection by overlying made ground subsoils (moderate vulnerability).	Granite bedrock aquifer (Poor aquifer).	Minor to moderate risk of localised discharge to ground of contaminated water. No possible impact on the status of the aquifer due to volume of leak indicated, natural attenuation within overburden and low potential for migration due to low connectivity of fracturing within the granite aquifer (Poor Aquifer).

Source: Modified from AWN Consulting, 2020.

Therefore, in line with the NRA 2009 Guidelines, the impact assessment has determined that the importance of these features is considered 'medium' and the magnitude of impact for works in and out of the river is considered 'small adverse' due to the volumes of potential spill, short-term nature of the effect and nature of the aquifer (Poor Aquifer with low connectivity).

Consequently, the significance rating of the potential impact to localised geology and hydrogeology is considered to be 'slight'.

Excavation, Loss of Soils and Bedrock Exposure

Construction works will require excavation and the removal of existing top-soil cover. An estimation of the excavations of soil/subsoil for foundation and ground level construction and bulk excavation has been calculated in the Construction and Operational Waste Management

Plan prepared by Benchmark (2020). The estimation is a total of 31,620m2 of soil/sub-soil, and dependent on the depth and thicknesses of underlying bedrock strata, there is potential to intercept bedrock. The SI did not indicate a presence of bedrock in the site area therefore the depth of the underlying bedrock strata cannot be commented upon.

Removal of soil cover will increase the vulnerability of the underlying bedrock and hydrogeology to risk of potential soil erosion and transportation and contamination. The existing vulnerability for much of the area where construction is planned is already classified as 'moderate'. This period however will be temporary, and all areas will be infilled and replaced during construction.

The importance of these features is considered 'medium' and the magnitude of impact considered 'small adverse' due to the short-term duration of impact.

Consequently, the significance rating of the potential impact from excavation and loss of soil is considered to be 'slight'.

Soil Compaction

Heavy equipment and heavily loaded large earthmoving vehicles will travel through the proposed development area potentially causing unwanted compaction and disturbance/erosion of natural ground or any unfinished road surfaces works. The importance of the attribute is considered 'low' and the magnitude of this impact is considered 'small adverse' due to the small volumes of traffic, short term duration of the potential impact due to seasonal working, and the likely low extent of potential impacts (i.e. being limited to haul routes and site working areas). The majority of the construction access roads are likely to be existing.

Consequently, the significance rating of this potential impact to geology and soils is considered to be 'imperceptible'.

Dewatering

Due to the relatively high-water table in the area (approximately 1.5-2m below ground level), dewatering works may be required for intrusive works during:

- Temporary or permanent relocation of underground infrastructure, if required.
- Excavation of soils for the demolition of existing foundations, as required.
- Excavation of soils for foundation works and planned design levels (i.e., underground parking).

The importance of this potential impact is considered 'low' and the magnitude of this potential impact is considered 'small adverse' due to the small and local extent of excavation and likely low permeability of the underlying materials it is anticipated that limited pumping of water may be required. The duration of the potential impact is likely to be short term.

Consequently, the significance rating of the potential impacts that may occur due to changes to hydrogeology flow and level is considered to be 'imperceptible'.

9.4.2 Operational Phase

9.4.2.1 Land

The land is currently allocated for residential use. The Project will not result in the 'take' of land which is currently utilised or has potential to be utilised for agricultural purposes or alternative uses.

The proposed development is cognisant with the land use objectives of the DLRDCC Development Plan (Dun Laoighre Rathdown County Council, 2022) and Objective A, which seeks "to provide residential development and/or protect and improve residential amenity".

9.4.2.2 Soils, Geology and Hydrogeology

The CSM prepared by AWN Consulting in 2020 identified the following sources considered plausible for the operational phase:

- Leak of petrol/ diesel fuel from individual cars in parking areas. Run-off may contain a worst-case scenario of 70 litres. Within the basement carpark area, any rainwater entering the sealed system as a result of snow melt or raindrops from cars will pass through a petrol interceptor providing treatment before discharging to the foul sewer. These mitigation measures have not been considered in this risk assessment.
- The discharge of foul effluent into sewer network.

Both of these were considered in the context of hydrology (see Chapter 10 Hydrology – Surface Water), however this EIAR determined it prudent to additionally identify the impact of the potential for leak of petrol/ diesel fuel from individual cars in parking areas upon the underlying aquifer, should run-off seep into the ground. The pathway considered includes the potential for vertical migration of any contaminants into the bedrock aquifer if significant reduced to the recorded 'moderate' vulnerability recorded at the site, which will result in the attenuation of any pollutants. The site is underlain by a Poor Aquifer (Ll) and as such, there is a low potential for offsite migration of any accidentally discharged contaminants within the bedrock.

The risk of impact from potential leak of petrol/ diesel fuel from individual cars in parking areas is low, on account of the low contaminant loading and short-term nature of any potential discharge. Therefore, in line with the NRA 2009 Guidelines, the impact assessment has determined that the importance of these features is considered 'medium' and the magnitude of impact for works in and out of the river is considered 'negligible'.

Consequently, the significance rating of the potential impact to geology and hydrogeology is considered to be 'imperceptible'.

9.5 Mitigation Measures

9.5.1 Construction Phase

LS_1: Appropriate due diligence to be undertaken in the sourcing of materials from responsible and audited suppliers, and in the testing of materials prior to use, to determine both suitability and presence of contaminated materials.

LS_2: If contamination is encountered in geology, soils or hydrogeology, suitable measures will be put in place to avoid mobilising the contamination based on the most appropriate industry best practice guidance for contaminated land management.

LS_3: The management of surplus excavated material or temporarily stored materials at the site compounds will be determined by the classification of the material (i.e., contaminated, or not, in line with the European Waste Catalogue and Hazardous Wate List, the Waste Management Act and the Hazardous Waste List), with mitigation measures implemented as appropriate.

LS_4: Hazardous material should be removed from site quickly. The quantities of hazardous waste being stored at any one time cannot exceed 25,000 litres of liquid waste or 40 m^3 of non-liquid waste. Further, the storage period must be less than six months.

LS_5: A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

LS_6: The pouring of concrete will take place within a designated area using a geo-synthetic material to prevent concrete runoff into the soil/ hydrogeology media. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility off site.

LS_7: Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier).

LS_8: Chute washout locations will be provided with appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.

LS_9: The guidance documents 'Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors' published by CIRIA (2001) and NRA Guidelines (2006) are to be adhered to.

LS_10: The storage of all fuels, other hydrocarbons and other chemicals shall be within the construction compound only and shall be in accordance with relevant legislation and best practice. In particular:

- Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage.
- Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).

LS_11: Preparation and implementation of a contingency plan for accidental leaks and spillages, in line with the CIRIA guidance 741 Environmental good practice on site.

LS_12: Excavation operations will be carried out such that surfaces will be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding.

LS_13: An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored at each work area. The Site Environmental Manager will maintain an inventory of spill kits on site to ensure all are properly equipped.

LS_14: As part of the site Environmental Induction Training all staff will be informed of the spill contingency plan and the location and use of the spill adsorbents.

LS_15: If a spillage does occur, the adsorbents will be treated as a hazardous waste and disposed of accordingly.

LS_16: Vehicles and equipment will be maintained by a suitably trained person and checked on a regular basis. Daily vehicle and equipment checks will include a visual assessment for oil or lubricant leaks prior to use.

LS_17: Vehicles will be parked on hardstanding areas overnight or when not in use, as applicable.

LS_18: Vehicles will minimise tracking over natural, exposed or unfinished surfaces, where practicable.

LS_19: Where practicable, compaction of any soil or subsoil which is to remain in situ in the works area will be avoided.

LS_20: Significant project vehicle and equipment movements will be along agreed predetermined routes along existing national, regional and local routes. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to a condition if at least equal quality to the original surface.

LS_21: Re-fuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in a designated area (or where possible off the site) with appropriate hardstand and drainage.

LS_22: Drip trays will be placed underneath any standing machinery to prevent pollution by oil/fuel leaks during refuelling. Where practicable, cleaning and refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas.

LS_23: Good housekeeping in line with industry best practises (e.g. CIRIA) will be adhered to including daily site clean-ups, use of disposal bins, etc.).

LS_24: Movement of material to be minimised in order to reduce degradation of soil structure and generation of dust.

LS_25: All excavated material will, where possible, be reused as construction fill. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material.

LS_26: Excavated soil materials will be stockpiled locally within the working area where possible, using an appropriate method to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, hydrogeology infiltration and generation of runoff.

LS_27: Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.

9.5.2 Operational Phase

LS_28: During the operational phase, rainwater from the roofs and roads will be conveyed directly to a surface water drainage system (designed following SUDS principles), which will include a petrol interceptor, a ponds, swales and rain gardens, and attenuation tanks.

LS_29: Foul water from the proposed development will be pumped to Ringsend WWTP. This treatment facility is currently operating at levels in excess of its intended design capacity and is therefore, not in compliance with the European Union's Urban Wastewater Treatment Directive. Irish Water have begun to upgrade the current infrastructure to achieve compliance with the Urban Wastewater Treatment Directive (91/271/EEC), with aims to have these works completed in 2025.

LS_30: Implementation of appropriate waste management practises to minimise leachate into the ground.

9.6 Residual Impacts

9.6.1 Construction Phase

The significance ranking of 'imperceptible' and 'slight' are the lowest ranking available in the NRA (2008) impacts assessment methodology. The majority of potential construction-phase impacts are considered to be of 'imperceptible' or 'slight' significant prior to mitigation.

The residual effects during construction are considered for the following features that rank of greater significance than 'imperceptible' prior to mitigation.

9.6.1.1 Accidental Spills and Leaks

Prior to mitigation, impact as assigned as 'slight' on account of the minor to moderate risk of localised discharge to the ground of contaminated water, as identified in the CSM. However, the implementation of mitigation measures during the construction phase (as outlined In Section 9.5), along with good site management and construction practices will eliminate any significant impact on the environment and reduce significance to 'imperceptible'.

9.6.1.2 Excavation, Loss of Soils and Bedrock Exposure

Prior to mitigation, impact as assigned as 'slight' due to the volume of excavation required and 'moderate' vulnerability of the underlying bedrock. However, the implementation of mitigation measures during the construction phase (as outlined In Section 9.5), along with good site management and construction practices will eliminate any significant impact on the environment and reduce significance to 'imperceptible'.

9.6.2 Operational Phase

The only identified operational impact was already considered to be 'imperceptible' in nature, relating to the potential for accidental leakage / spillage / contaminated run-off from vehicles in the parking area of the development. With the design and installation of permanent mitigation measures for the operational phase (i.e., petrol interceptors), all negative impacts on the soil and geological environment are eliminated.

9.7 Monitoring

9.7.1 Construction Phase

Visual monitoring will be undertaken during the construction by a Health, Safety & Environmental Officer to determine compliance with the suggested mitigation measures described in Section 9.5. Further, site records will be inspected to determine history of any contamination / spillages and how these were addressed. Improvements and lessons learnt may be a useful tool to ensure effectiveness.

9.7.2 Operational Phase

A regular maintenance regime should be implemented by the developer to ensure that all environmental protection measures are maintained, including all petrol interceptors and SUDs measures in the car parking areas, and all infrastructure is kept in good working condition.

9.8 Reinstatement

It is intended that all construction-related soil requirements (with the exception of some minor quantities of top-soil for landscaping) will be sourced from within the site itself, and that no external soils will be imported for use. Therefore, some of the soils excavated will be reinstated for use in the development, representing a sustainable use of resources. No other reinstatement effects are identified under this Chapter.

9.9 Interactions

Possible interactions exist between the impacts identified to land, soils and geology and those identified to 'Hydrology - Surface Water' (Chapter 10) and 'Biodiversity' (Chapter 8). A potential effect on the soils and geological environment includes the excavation and removal of made ground and overburden which could potentially increase the sediment loading to the surface water environment and impact to associated aquatic species. Further, contaminated or imported soil has the potential to run off during the construction phase and have negative impacts on surface water environments and associated biodiversity.

9.10 Cumulative Impacts

In the assessment of cumulative impacts for this EIAR, permitted/ongoing (nos. 14 identified) and planned projects (nos. 7 identified) were considered, represented by developments which consist of 50 residential units or more and located within 2km of the proposed development.

Cumulative impacts are those which accrue to key land, soil, geology, and groundwater receptors as a result of incremental changes caused by other existing and proposed plans or projects together with those caused by the proposed development.

Cumulatively, the identified projects in combination with the proposed development may create pressure on the existing soils/geology conditions and underlying aquifer however the combined impact is unlikely to be significant given the nature and scale of the identified projects and ability for all impacts to be sufficiently mitigated through best-practise construction techniques.

9.11 'Do-Nothing' Effect

9.11.1 Land

Under the do-nothing effect, the site would remain as is, with the existing buildings remaining as disused. This would result in the land not being utilised for its intended purpose under the *Dún Laoghaire-Rathdown County Development Plan 2022-2028* and therefore not meet planning objectives.

The effect is direct, negative and not significant. The duration of effect is unable to be determined, given that other developments may have been proposed for the land in question.

9.11.2 Soils, Geology and Hydrogeology

Under the do-nothing effect, all soils present on site would remain intact and no direct disturbance to the physical geological and hydrogeological regime would be noted. However, another consideration is that the site is currently susceptible to long-term contamination potential from concrete / steel leachate given the nature of the buildings as disused and subject to future disrepair and degradation. This may result in long-term effects to the soil, geology and hydrogeology of the project area.

9.12 Difficulties in Compiling the Chapter

No difficulties were encountered in the preparation of this Chapter.

9.13 Conclusion

This Chapter was developed with the aid of various guidance and resource documents, and site investigation information, as listed below as well as the experience and knowledge of the design team.

This chapter reviews the impacts to land, soils, and geology across the site during the construction and operational phase over a number of categories (e.g. dewatering, excavation vehicle leaks etc.). It is concluded that where there are potential issues to the soils and geological environment the effects only range from slight to moderate and any impact from these is low to negligible ensuring the appropriate mitigation measures are applied where required. The mitigation measures during construction will include strict adherence to the Waste Management Act, a comprehensive Contractor's Waste Management Plan, safe storage of hazardous materials, correct maintenance and refuelling of vehicles and controlled disposal of treated run-off.

It is proposed that the mitigation measures listed above will be implemented to ensure that negligible impacts are applied to the land, soils and geology of the site. The implementation of mitigation measures during the construction phase (as outlined In Section 9.5), along with good site management and construction practices will eliminate any significant residual impact on the environment and reduce significance to 'imperceptible'.

9.14 References

AWN Consulting (2020). Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Residential Development Site at Dalguise House.

Dún Laoghaire-Rathdown County Council (2016). *Dún Laoghaire-Rathdown County Development Plan 2016-2022.*

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10.0 HYDROLOGY – SURFACE WATER

10.1 Introduction

This Chapter describes the likely significant effects of the proposed Dalguise House Large-Scale Residential Development (the 'proposed development') on hydrology (surface water). Groundwater features of relevance and hydrogeology have been considered separately in Chapter 10 'Land, Soils, Geology and Hydrogeology'. The following aspects have been considered relevant to this assessment:

- Design:
  - Design features of the proposed development that may cause direct impact to surface water bodies in the study area.

- Construction:
  - Risks associated with working in proximity to the surface water bodies, including potential contamination from sediment, fuel/oil usage, concreting works, and wastewater discharges.
  - Construction risks are applicable to the construction of both the Large-scale Residential Development and the Stradbrook Stream Bridge.

- Operation Phase:
  - The potential for impact to hydrology features with regards to the operational performance of the operational storm water and wastewater drainage network.

This Chapter has been prepared by Jackelyn Wren, Senior Environmental Specialist at ByrneLooby. Jackelyn is an Affiliate Member of IEMA with a Honours Bachelor of Arts Degree in Geography, and eight years' professional experience in the preparation of Environmental Impact Assessment (EIA) Reports in Ireland and the Middle East. Jackelyn has worked on numerous projects varying in environmental restrictions and working with different government bodies, e.g Amaala Service Marinas, an ultra-luxury destination along Saudi Arabia's northwestern coast, Saggart Reservoir, Dublin, Ireland, completing Environmental Impact Assessment (EIA), Waste Management Plan (WMP) and Oil Spill Contingency Plan (OSCP).

10.2 Methodology

10.2.1 Legislation

The main legislation which provides for hydrology protection in Ireland is the Water Framework Directive (WFD, 2000/60/EC) which establishes a legislative framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife and habitats. Specifically, the WFD aims to:

- *"protect/enhance all waters (surface, ground and coastal waters);*
- *achieve 'good status' for all waters by December 2015;*
- *manage water bodies based on river basins (or catchments);*
- *involve the public; and*
- *streamline legislation".*

Transposing legislation (S.I. 792 of 2009, European Communities Environmental Objective (Surface Water) Regulations 2009 as amended) outlines the water protection and water management measures required in Ireland to maintain high status of waters where it exists, prevent any deterioration in existing water status and achieve at least 'good' status for all waters. A number of River Basin Management Plans (RBMPs) were developed to address the requirements of the Water Framework Directive (WFD) through programmes of measures which include full implementation of existing legislation including the Water Pollution Acts, Water Services Act, Bathing Water Quality Regulations, IPPC Regulations, Urban Wastewater Treatment Regulations, the Foreshore Acts and the Birds and Habitats Directives (particularly the Appropriate Assessment process).

Other important pieces of EU and national legislation pertaining to the hydrological environment include:

- S.I. 722 of 2003, European Communities (Water Policy) Regulations, as amended
- 350 of 2014, European Union (Water Policy) Regulations 2014.
- The EU Floods Directive 2007/60/EC.
- S.I. 122 of 2010 European Communities (Assessment and Management of Flood Risks) Regulations.
- S.I. 81 of 1988, European Community Environmental (Quality of Surface Water Intended for Human Consumption) Regulations 1984 as amended.

10.2.2 Policy

The *Dún Laoghaire-Rathdown County Development Plan 2022-2028* sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the county over the plan period. The plan sets out an approach centred on the core principle of sustainability with a focus on creating vibrant, liveable, climate resilient communities. The following policies are relevant in relation to this hydrology assessment:

- Policy Objective GIB10: Dublin Bay Biosphere.
- Policy Objective GIB18: Protection of Natural Heritage and the Environment.
- Policy Objective GIB19: Habitats Directive.
- Policy Objective GIB21: Designated Sites.
- Policy Objective GIB24: Rivers and Waterways.

- Policy Objective EI1: Sustainable Management of Water.
- Policy Objective EI4: Water Drainage Systems.
- Policy Objective EI5: River Basin Management Plans (RMBPs).
- Policy Objective EI6: Sustainable Drainage Systems.
- Policy Objective EI9: Drainage Impact Assessment.
- Policy Objective EI10: Storm Overflows of Sewage to Watercourses.
- Policy Objective EI16: Water Pollution.
- Policy Objective EI21: Catchment Flood Risk Assessment and Management (CFRAM).
- Policy Objective EI22: Flood Risk Management.

10.2.3 Impact Assessment Guidance

The Hydrology – Surface Water Chapter of this EIAR has been prepared in line with the suggested topics outlined in relation the Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022), and the following guidance was used specifically in the assessment of impacts:

- NRA (2009) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

The rating of potential environmental impacts on the surface and groundwater environment is based on the matrix presented in the table below, which takes account of the quality, significance, duration and type of impact characteristic identified (NRA, 2009).

Table 10-40: Rating of Significant Environmental Impacts (NRA, 2009)

Importance of attribute	Magnitude of impact			
	Negligible	**Small**	**Moderate**	**Large**
Extremely High	Imperceptible	Significant	Profound	Profound
Very high	Imperceptible	Significant/ Moderate	Profound/ Significant	Profound
High	Imperceptible	Moderate/ Slight	Significant/ Moderate	Profound/ Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/ Moderate

Table 10-41: Criteria for Rating (NRA, 2009)

Importance	Criteria Description	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale.	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites'

Importance	Criteria Description	Typical Examples
		designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very high	Attribute has a high quality or value on a regional or national scale.	River, wetland or surface water body ecosystem protected by national legislation – NHA status. Regionally important potable water source supplying >2500 homes Quality Class A (Biotic Index Q4, Q5) Flood plain protecting more than 50 residential or commercial properties from flooding. Nationally important amenity site for wide range of leisure activities.
High	Attribute has a high quality or value on a local scale.	Salmon fishery. Locally important potable water source supplying >1000 homes. Quality Class B (Biotic Index Q3-4). Flood plain protecting between 5 and 50 residential or commercial properties from flooding. Locally important amenity site for wide range of leisure activities.
Medium	Attribute has a medium quality or value on a local scale.	Coarse fishery. Local potable water source supplying >50 homes. Quality Class C (Biotic Index Q3, Q2-3). Flood plain protecting between 1 and 5 residential or commercial properties from flooding.
Low	Attribute has a low quality or value on a local scale.	Locally important amenity site for small range of leisure activities. Local potable water source supplying <50 homes. Quality Class D (Biotic Index Q2, Q1). Flood plain protecting 1 residential or commercial property from flooding. Amenity site used by small numbers of local people.

The significance ranking is initially determined pre-mitigation (i.e. prior to the introduction of mitigation measures) and residual impacts are ranked based on the assumptions that all mitigation measures are adopted.

10.2.4 Data Sources

The appraisal of likely significant effects on hydrology was conducted through an initial desk-top review of the existing conditions within the study area. Baseline information was sourced from a number of secondary data resources including:

- Aerial Photography: Bing Maps and Google Maps (accessed 2022).
- EPA (accessed 2022). EPA Maps, Water Framework Directive.
- Water Framework Directive (accessed 2022).
- Catchments.ie (accessed 2022).
- Dún Laoghaire-Rathdown County Development Plan 2016-2022 (Dún Laoghaire-Rathdown County Council, 2022).
- *Dún Laoghaire-Rathdown County Development Plan 2022-2028* (Dun Laoighre Rathdown County Council, 2022).
- Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Residential Development Site at Dalguise House (Awn, 2020).
- Drainage Impact Assessment Report, Development of Land at Monkstown Road, Dublin, Dalguise House (Byrnelooby, 2022).
- Flood Risk Assessment, Proposed Development at Dalguise House, Monkstown, Dublin 18 (McCloy Consulting, 2022).
- EIA Screening Report in respect of Lands at Dalguise House, Monstown Road, Monkstown (John Spain Associates, 2020).
- Roughan & O'Donovan Consulting Engineers (2022). Stradbrook Stream Bridge, Monkstown, County Dublin. Natura Impact Statement.
- Roughan & O'Donovan Consulting Engineers (2022) Dalguise House Large-Scale Residential Development, Monkstown, Co. Dublin. Natura Impact Statement.

Direct reference has been made to Project-specific reporting, including the Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Residential Development Site at Dalguise House prepared by Awn Consulting in 2020. Here, a Conceptual Site Model (CMS) was prepared to ascertain the potential impacts of the Project to hydrology and hydrogeology resources, the latter of which is used to inform the impact assessment of this Chapter. Further, the Natural Impact Statements (NIS) prepared by Roughan & O'Donovan Consulting Engineers for the Project (see in list above) has been referenced closely in the impact assessment for this Chapter.

10.3 Baseline Environment

10.3.1 Surface Waterbodies

The proposed development site lies within the Liffey River and Dublin Bay Catchment (Catchment ID_09), and includes the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point, Co. Dublin, draining a total area of 1,616km² (EPA, 2021) (catchments.ie).

The Environmental Protection Agency (EPA, 2022) on-line mapping presents the available water quality status information for water bodies in Ireland. Dublin Bay has a Water Framework Directive (WFD) status (2013 – 2018) of 'Good' and a risk score of 'Not at risk'. The ecological status of transitional and coastal water bodies during 2013-2018 for Dublin Bay is classed as 'good' (EPA, 2022). The most recent surface water quality data for the Dublin Bay for the 2015–2017 assessment on trophic status of estuarine and coastal waters indicate that they are 'Unpolluted' (based on Map 10, EPA, 2018)'. Under the 2015 'Trophic Status Assessment Scheme' classification of the EPA, 'Unpolluted' means there have been no breaches of the EPA's threshold values for nutrient enrichment, accelerated plant growth, or disturbance of the level of dissolved oxygen normally present.

The current EPA (2021) bathing water quality report has classified nearby Seapoint as 'excellent quality' from 2016-2018. The EPA rates beaches as follows: Excellent, Good, Sufficient and Poor. The 2019 status is based on the assessment of bacteriological results for the period 2015 to 2018. Seapoint has achieved an Excellent Water Quality rating for the four consecutive years 2015 to 2018. Annual water quality ratings are generally calculated using monitoring results over a four-year period and are assessed against stringent bacterial limits to protect bather health. The 2019 monthly data has continued to indicate excellent status and that there is no likelihood of significant effects on Bathing Water quality at the Seapoint beach as a result of the Proposed Development

10.3.1.1 Stradbrook Stream

The EPA (2022) on-line database indicates one watercourse in the study area, the Stradbrook Stream (EPA name is Brewery Stream EPA code IE_EA_09B130400), flowing along the northern site boundary and is partially culverted along its route. It has a confluence with the Mikie Brien stream in Monkstown prior to reaching its outfall at Dun Laoghaire (located east of the proposed development).

An assessment of the hydrological characteristics of the watercourse (McCloy Consulting, 2022)., including review of local topography, surface water drainage records and a site visit, indicated that the Stradbrook Stream at the site is fed by a 1200 mm pipe which constitutes the outfall from the upstream surface water drainage network. Natural hydrology in the upstream network is modified such that the former watercourse effectively no longer exists, and its function has been replaced by the artificial surface water drainage network.

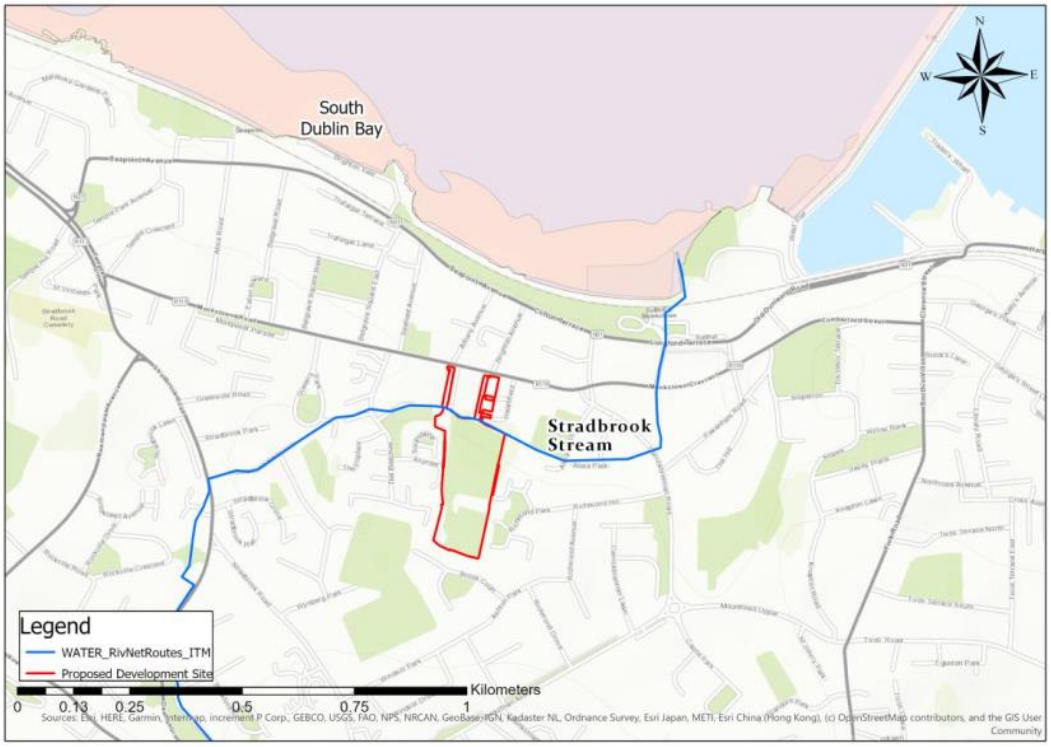

Figure 10-5: Stradbrook Stream Location

No chemistry monitoring data is available for the stream on the EPA database. There is a National Water Monitoring Station located along the Stradbrook stream, on the northern boundary of the proposed development site with Station ID RS09M020300 (Monkstown Stream – Drayton Close), however this data is not available from the EPA or other sources. The EPA's online map viewer provides access to information at individual waterbody level in Ireland. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters) or to groundwater. The Stradbrook Stream is not monitored by the EPA and no Q-values are available, however the stream has been assigned a River Waterbody WFD Status of 'Moderate' using expert judgement. The Dublin Bay Coastal Waterbody has been given a WFD status of 'Good' and a WFD Score of 'Not at Risk', The Liffey Estuary Transitional Waterbody has a WFD status of 'Good' and a WFD Risk Score of 'Not at Risk', the Tolka Estuary Transitional Waterbody has a WFD status of 'Moderate' and a WFD Score of 'At Risk', and the North Bull Island Transitional Waterbody has a WFD status of 'Moderate' and a WFD Score of 'Review'.

As outlined in Chapter 8 (Section 8.5.2.8), macroinvertebrate and water sampling were undertaken at the Stradbrook Stream on the 12th October 2021. During the macroinvertebrate and water chemical survey, each sampling point was assigned an EPA Q-Value and a WFD ecological status (Table 8-16). The results from both sampling points indicate that the water quality is poor, which is illustrated by the chemical analysis (Q-value of Q3), freshwater macroinvertebrate species assemblage and the presence of sewage fungus. Watercourses are sensitive to pollution and sedimentation and can act as a conduit for pollutants and invasive

species to spread. Therefore, 'the Stradbrook Stream' has been included as a Key Ecological Receptor.

10.3.1.2 Designated Sites

The Dublin Bay waterbody (EPA online site code: 00206) is located 350 m north of the development. Chapter 8 provides a full description of the designated sites in the Zone of Influence of and with hydrological connection to the proposed development. In summary they include:

- Nos. 7 Nationally Designated Sites (pNHAs).
- Nos. 12 European Designated Sites (SACs / SPAs).
- Nos. 10 Internationally Designated Sites (Ramsar Sites, Marine Protected Areas, Wildfowl Sanctuaries).

10.3.2 Existing Flood Risk

The Office of Public Works (OPW) have developed draft Flood Maps as part of the Catchment Flood Risk Assessment and Management (CFRAM) Programme. OPW mapping shows that areas to the north-east of the site are predicted by surface water flooding. No fluvial flooding is shown in the vicinity of the site and is not considered to be at risk from groundwater flooding (McCloy Consulting, 2022). OPW Past Flood Events mapping (also available through floodinfo.ie) has records of flooding in Monkstown to the east of the site. The closest recorded event to the site caused flooding of the Carrickbrennan Road area in October 2011. This event is considered unlikely to have flooded the site as the areas affected are at an elevation more than 2.5 m lower than existing ground levels at the site (McCloy Consulting, 2022).

As part of the *Dún Laoghaire-Rathdown County Development Plan 2022-2028*, Flood Zone Maps (dated March 2022). The Maps do not show any flooding (Flood Zone A / Flood Zone B) affecting the site or surrounding areas. However, the northern extent of the site is shown to be an 'Area of Flood Risk Concern' for Fluvial – Surface Water; which is likely to coincide with the Stradbrook Stream (McCloy Consulting, 2022). The vulnerability of the proposed development from flooding ranges from less vulnerable (car parking / access roads) to highly vulnerable (built residential development). The open amenity areas / green spaces are classes as being water-compatible and therefore not vulnerable (McCloy Consulting, 2022).

As mentioned, the Stream is fed by a 1200mm pipe which constitutes the outfall from the upstream surface water drainage network. In addition to the 'pipe full' flow, lateral inflows were considered to account for any overland flows downstream of the 1200 mm pipe along the extent of the watercourse that have the potential to affect the site.

A hydraulic modelling exercise was undertaken by McCloy Consulting (2022). An extract from existing scenario, present day flood mapping is shown below.

Figure 10-6: Flood Mapping (existing condition)

10.3.3 Surface Water Drainage

Examination of the drainage infrastructure maps supplied by Irish Water/ Dun Laoghaire Rathdown County Council Drainage Division for the surrounding areas of Dalguise House site, indicate that there is no specific separate surface water main in proximity to the development.

In general, existing developed sites adjacent to the subject site have discharged surface water to the Stradbrook Stream located on the Northern boundary, using agreed controlled flows, set by the Local Authority, equivalent to, our less then undeveloped greenfield discharge Qbar as defined in the section 6.3.1.2.2 "River Regime Protection" of the Greater Dublin Strategic Drainage Study Volume 2 – New development and within Report 124 " Flood estimation for small catchments",1994 produced by the Institute of Hydrology.

The current site surface water from the above existing areas is combined with foul discharges and connected to an existing site septic tank or onto the existing 450 dia. vitrified clay Irish Water combined main from Monkstown Valley flowing down the existing site entrance roadway onto Albany Avenue (ByrneLooby, 2022). There is no attenuation of rainwater run-off and this drains to the Stradbrook Stream (which discharges into Dublin Bay at the Dun Laoghaire Harbour) or percolates to ground. As such there is a direct open-water linkage between the proposed development and Dublin Bay (AWN Consulting, 2020).

10.3.3 Wastewater Discharges

The background information identifies that a main combined sewer exists running under/on the line of the Stradbrook/Monkstown Stream. The sewer is a 450mm dia. vitrified clay (VC) line flowing towards Carrickbrennan Road. A further 450mm dia. Irish Water/ DLRCC Vitrified Clay (VC) combined line, exists, which runs from the Monkstown Valley development onto the

application site, current entrance/exit roadway, and onto Monkstown Road, down Albany Avenue before connecting onto a main combined line on Seapoint Avenue was noted (ByrneLooby, 2022). From there it is pumped to the wastewater treatment plant at Ringsend in Dublin. Therefore, there is an indirect source pathway linkage from the proposed development site via the public sewer discharging to Ringsend WWTP.

10.4 Potential Impacts of the Proposed Project

10.4.1 Construction Phase

Direct hydrological linkages exist between the Stradbrook Stream (located north of the proposed development site) and the Dublin Bay waterbody (EPA online site code: 00206) where a number of SACs and SPAs are situated, the closest of which is the South Dublin Bay SAC, and the South Dublin Bay and River Tolka Estuary SPA located approximately 400m and 450m respectively from the north boundary of the proposed development site. Dublin Bay is identified as having a WFD status (2013 – 2018) of 'Good' and a WFD risk score of 'Not at risk'. The ecological status of transitional and coastal water bodies during 2013-2018 for Dublin Bay is classed as 'good'. The waterbody most likely to be impacted by potential construction phase impacts is the Stradbrook Stream which has a 'moderate' WFD status (2013-2018) but a 'under review' risk rating.

Under WFD requirements, the development of the scheme should incorporate measures not to worsen the statuses of these waterbodies.

Construction phase impacts to these surface waterbodies are possible from the following (also identified in the Project-specific NIS prepared by Roughan & O'Donovan Consulting Engineers in 2022). These impacts are considered for the proposed development itself and the proposed bridge across the Stradbrook Stream.

- Sedimentation – Surface water run-off from construction areas may contain high levels of suspended sediments. Significant depositions into the river can have effects of sedimentation build up and alteration of the river hydromorphology, smothering of habitats (assessed in Chapter 8), and changes in water composition.
- Spillage of hydrocarbons and other chemicals – Leaks of diesel, petrol and lubricating oils from poorly maintained vehicles, plant, equipment or storage tanks provide for a risk of input of hydrocarbons into the environment. In the absence of appropriate mitigation, hydrocarbons from the construction site may spill directly into Stradbrook Stream or be washed into it in construction site run-off. This has the potential to cause negative ecological impacts on the stream and biodiversity, including direct phytotoxic effects, and alteration of the nutrient balance and microbiota in soil and water.
- Spillage of cementitious materials – During construction, concrete or other cementitious materials may spill directly into the Stradbrook Stream or be washed into it in run-off. Cementitious materials are highly alkaline and, consequently, can

drastically alter the pH of the receiving watercourse, resulting in potentially profound ecological impacts on the affected watercourse and any habitats connected to it.

- Inadequate treatment of wastewater – Mistreatment from on-site toilets and washing facilities provides for potential water quality impacts. Faecal contamination can alter the nutrient balance in soils and water, causing significant changes in microbial communities and reductions in oxygen levels.

The NIS prepared for the proposed development at the Stradbrook Stream Bridge (Roughan & O'Donovan Consulting Engineers, 2022) identified the above water quality impacts as being the only impacts likely to arise from the proposed development which have any potential to adversely affect the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA, the South Dublin Bay SAC and the Dalkey Islands SPA.

A Hydrological and Hydrogeological Qualitative Risk Assessment was prepared by AWN Consulting in 2020 including the completion of a Conceptual Site Model (CSM), evaluating the potential impact of accidental spills upon the surface water bodies. A CSM allows possible Source Pathway Receptor (S-P-R) linkages to be identified and if no S-P-R linkages are identified, then there is no risk to identified receptors. Potential sources during the construction phases are considered, and for the purposes of undertaking the potential of any hydrological S-P-R linkages, all potential sources of contamination are considered without taking account of any measures intended to avoid or reduce harmful effects of the proposed project (mitigation measures) i.e., a worst-case scenario.

The following sources are considered plausible for the proposed construction site:

- Accidental leakage may occur from construction site equipment. As a worst-case scenario an unmitigated leak of 300 litres is considered. This would be a single short-term event.
- Use of wet cement is a requirement during construction. Run-off water from recent cemented areas will result in highly alkaline water with high pH. As this would only occur during phases of work this is again considered as a single short-term event rather than an ongoing event.
- The demolition of the existing building units and construction requires soil excavation and removal and import. Unmitigated run-off could contain a high concentration of suspended solids during earthworks. These impacts could be considered as intermittent short-term events.

With regards to hydrology, the pathway considered includes the existence of an open water hydrological linkage with Dublin Bay through Stradbrook Stream located north of the proposed development site.

The below summarises the plausible pollutant linkages (S-P-R) considered as part of the assessment as well as a review of the assessed risk to the hydrological setting. Impacts of accidental leaks / spills to geology and hydrogeology receptors (i.e., aquifer) are considered in Chapter 9 Land, Soils, Geology and Hydrogeology.

Table 10-3: Construction-Phase Plausible Pollutant Linkages

Source	Pathways	Receptors Considered	Risk of Impact (without mitigation)
Discharge to ground of runoff water with High pH from cement process. Unmitigated run off containing a high concentration of suspended solids	Direct pathway through stormwater drainage and Stradbrook Stream to Dublin Bay	Stradbrook Stream and Dublin Bay (SAC/ SPA/ pNHA)	Minor to moderate risk of a temporary impact without mitigation on Stradbrook stream. No possible impact on water quality status in Dublin Bay due to low contaminant loading and attenuation and dilution near source area.

Source: Modified from AWN Consulting, 2020.

The Biodiversity Chapter of this EIAR (Chapter 8, Table 8-18) identifies construction-phase impacts of contamination and reduced water quality to the identified sensitive hydrological receptors with ecological significance, including:

- Stradbrook Stream
- Nationally Designated Sites
- European Designated Sites
- Internationally Designated Sites

The above impact assessment was prepared in accordance with TII 2009 *Guidelines for Assessment of Ecological Impacts of National Road Schemes,* related specifically to the ecological significance of the waterbody and how impacts may cause effect to the ecological status of Qualifying Interests. In line with the impact assessment methodology for this Chapter however, impacts are assessed relative to surface water quality and resource and/or amenity value, in line with the guidelines set out in NRA 2009 (**Table 10-41**). This is outlined further below.

Table 10-4: Construction-Phase Impact Assessment to Surface Waterbodies (NRA, 2009)

Receptor	Un-mitigated Impact Assessment in accordance with TII, 2009 (from Chapter 8, Table 8-18)	Un-mitigated Impact Assessment in accordance with NRA (2009).
Stradbrook Stream	Water quality impacts which could arise in the event of accidental pollution from the proposed development could constitute **Short-term Significant Negative Impact at the local level.**	Receptor Importance: **Medium.** Magnitude of Impact: **Large.** Significance of Impact: **Significant**.
Nationally Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the National Level** on Nationally Designated Sites downstream of the proposed development	Receptor Importance: **Very High**. Magnitude of Impact: **Small adverse.** Significance of Impact: **Significant/ Moderate.**
European Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on European Designated Sites downstream of the proposed development	Receptor Importance: **Extremely High.** Magnitude of Impact: **Small adverse.** Significance of Impact: **Significant.**
Internationally Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on Internationally Designated Sites downstream of the proposed development	Receptor Importance: **Extremely High.** Magnitude of Impact: **Small adverse.** Significance of Impact: **Significant.**

10.4.2 Operation Phase

10.4.2.1 Surface Waterbodies

The CSM prepared by AWN Consulting in 2020 identified the following sources considered plausible for the operational phase:

- Leak of petrol/ diesel fuel from individual cars in parking areas. Run-off may contain a worst-case scenario of 70 litres. Within the basement carpark area, any rainwater entering the sealed system as a result of snow melt or raindrops from cars will pass through a petrol interceptor providing treatment before discharging to the foul sewer. These mitigation measures have not been considered in this risk assessment.
- The discharge of foul effluent into sewer network, whereby direct linkages to the SACs and SPAs is possible from discharge through the Ringsend WWTP. Two new connections are proposed for the development, which will eventually be pumped to

this WWTP. Note during periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system.

With regards to hydrology, the pathway considered includes the existence of an open water hydrological linkage with Dublin Bay through Stradbrook Stream located north of the proposed development site.

The below summarises the plausible pollutant linkages (S-P-R) considered as part of the assessment as well as a review of the assessed risk to the hydrology setting.

Table 10-5: Operation-Phase Plausible Pollutant Linkages

Source	Pathways	Receptors Considered	Risk of Impact (without mitigation)
Foul effluent discharge to sewer.	Indirect pathway to Dublin Bay through public sewer via Ringsend WWTP	Dublin Bay (SAC/ SPA/ pNHA)	No perceptible risk – Even without treatment at Ringsend WWTP, the peak effluent discharge from the site would equate to 0.096%[Note 1] of the licensed discharge at Ringsend WWTP, would not impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).
Discharge to ground of hydrocarbons from carpark leak	Direct pathway through stormwater drainage by Stradbrook Stream water course.	Dublin Bay (SAC/ SPA/ pNHA).	No possible impact due to low contaminant loading and short-term nature of any potential discharge.

Note 1: This assessment is based on the current licenced discharge from the Ringsend WWTP. Irish Water have a number of projects which have receive planning or are within the planning process which will result in greater capacity for wastewater treatment for the greater Dublin area. In particular, the following key projects are applicable:
(i) Ringsend WWTP upgrade –Upgrade works are scheduled to increase the treatment capacity from 1.64 million p.e. to 2.4million p.e. This upgrade is currently programmed to be complete in 2025.
(ii) Greater Dublin Drainage Project – A planning application was lodged with An Bord Pleanála in June 2018, an oral hearing held in March 2019.
(iii) 9C sewer duplication - A planning application for this project was lodged with FCC on 11th May 2017 and FCC granted planning permission on 5th July 2017. Construction commenced in 2019 and will be completed by September 2022.

Source: Modified from AWN Consulting, 2020.

The Biodiversity Chapter of this EIAR (Chapter 8, Table 8-18) identifies operational-phase impacts of reduced water quality to the identified sensitive hydrological receptors with ecological significance, including:

- Stradbrook Stream
- Nationally Designated Sites
- European Designated Sites
- Internationally Designated Sites

This impact assessment in Chapter 8 was prepared in accordance with TII 2009 *Guidelines for Assessment of Ecological Impacts of National Road Schemes,* related specifically to the ecological significance of the waterbody and how impacts may cause effect to the ecological status of Qualifying Interests. In line with the impact assessment methodology for this Chapter however, impacts are assessed relative to surface water quality and resource and/or amenity value, in line with the guidelines set out in NRA 2009 (**Table 10-41**). This is outlined further below.

Table 0-42: Operation Phase Impact Assessment to Surface Waterbodies (NRA, 2009)

Receptor	Un-mitigated Impact Assessment in accordance with TII, 2009 (from Chapter 8, Table 8-18)	Un-mitigated Impact Assessment in accordance with NRA (2009).
Stradbrook Stream	The reduction in water quality in the Stradbrook Stream is considered to constitute a **Permanent Moderate Impact at the Local Level.**	Receptor Importance: **Medium.** Magnitude of Impact: **Moderate.** Significance of Impact: **Moderate.**
Nationally Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the National Level** on Nationally Designated Sites downstream of the proposed development	Receptor Importance: **Very High**. Magnitude of Impact: **Small adverse.** Significance of Impact: **Significant/ Moderate.**
European Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on European Designated Sites downstream of the proposed development	Receptor Importance: **Extremely High.** Magnitude of Impact: **Small adverse.** Significance of Impact: **Significant.**
Internationally Designated Sites	Pollutants entering the Stradbrook Stream have the potential to lead to **Short-term and Permanent Moderate Impacts at the International Level** on Internationally Designated Sites	Receptor Importance: **Extremely High.** Magnitude of Impact: **Small adverse.** Significance of Impact: **Significant.**

	downstream of the proposed development	

10.4.2.2 Flood Risk

The site-specific hydraulic modelling revealed that proposed development is outside the present day and climate change 1% AEP and 0.1% AEP fluvial floodplain of the Stradbrook Stream. It has also shown that the proposed development will not have any off-site effect / increase in flood risk elsewhere. The site has been shown to be partly affected by flooding, however. Therefore, the 'sequential approach' has been applied to the existing flood scenario at the site as follows (McCloy Consulting, 2022):

- Highly vulnerable development (residential) has been wholly located in Flood Zone C / outside the 0.1% AEP floodplain (with the exception of 6 m2 of Block B). It is noted that Block B lies entirely outside the post development 0.1% AEP floodplain.
- Less vulnerable development (access roads) has been located in Flood Zone C / outside the 0.1% AEP floodplain with the exception of the section crossing the watercourse to accommodate site access. It is noted that proposed levels of the watercourse crossing will ensure it lies outside / above the 0.1% AEP flood level.
- Less vulnerable development (car parking) has been sited in pre-development Flood Zone C as much as possible but sections in the north of the site are by necessity located in Flood Zone A / 1% AEP and Flood Zone B / 0.1% AEP. Finished levels in those areas are subsequently raised relative to adjacent flood levels and have a post-development probability of flooding equivalent to Flood Zone C.
- Open green space (non-amenity) areas are sited within Flood Zone A but are considered appropriate as such under the OPW Guidelines.

10.5 Mitigation Measures

10.5.1 Construction Phase

H_1: All works in proximity to the Stradbrook Stream will follow best practice guidance, as per the following documents:

- Guidelines for the crossing of Watercourses During Construction of National Road Schemes (TII, 2008).
- Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (IFI, 2016).
- C532 Control of water pollution from construction sites: guidance for consultants anD contractors (CIRIA, 2001).

H_2: Double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential silt or sediment run-off.

H_3: Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse, in order to minimize sources of sediment runoff.

H_4: Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations.

H_5: In order to limit the potential for pollution due to run-off from construction, all run off waters will be directed through sedimentation ponds prior to discharge. These ponds must be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to pond and suspended solids are allowed to settle.

H_6: When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used.

H_7: Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near the watercourses.

H_8: Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified Environmental Manager.

LS_9: There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering watercourses.

LS_10: Concrete waste and wash-down water will be contained and managed on site to prevent pollution of the watercourses.

H_11: On-site concrete batching and mixing activities will only be allowed at the identified construction compound.

LS_12: Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier).

H_13: Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival on site.

H_14: Chute washout locations will be provided with appropriate designated, contained impermeable areas and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be

by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.

Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager and were necessary the relevant Environmental Specialist. All method statements for works in, near or liable to impact on a waterway must have prior agreement with IFI and NPWS.

H_15: Surface runoff from the compound will be minimised by ensuring that the paved/ impervious area is minimised. All surface water runoff will be intercepted and directed to appropriate treatment systems (settlement facilities and oil trap) for the removal of pollutants and/or silt prior to discharge. The site compound will be fenced off as part of the site establishment period.

LS_16: Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage.

H_17: Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).

H_18: Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.

H_19: The guidance documents 'Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors' published by CIRIA (2001) and NRA Guidelines (2006) are to be adhered to due to the close proximity to nearby watercourses.

H_20: Preparation and implementation of a contingency plan for accidental leaks and spillages, in line with the CIRIA guidance 741 Environmental good practice on site.

H_21: An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored at each work area. The Site Environmental Manager will maintain an inventory of spill kits on site to ensure all are properly equipped.

H_22: As part of the site Environmental Induction Training all staff will be informed of the spill contingency plan and the location and use of the spill adsorbents.

H_23: Vehicles and equipment will be maintained by a suitably trained person and checked on a regular basis. Daily vehicle and equipment checks will include a visual assessment for oil or lubricant leaks prior to use.

H_24: An appropriate dewatering methodology will be selected for works. This will consider the risk of any ground instability arising from dewater activities to potentially sensitive receptors in proximity to the works area. Where required, discharge from the dewatering

process will be passed to a proprietary silt removal system located within the working area before discharge to any watercourses.

10.5.2 Operational Phase

H_25: During the operational phase, rainwater from the roofs and roads will be conveyed directly to a surface water drainage system (designed following SUDS principles), which will include a petrol interceptor, a ponds, swales and rain gardens, and attenuation tanks.

H_26: Foul water from the proposed development will be pumped to Ringsend WWTP. This treatment facility is currently operating at levels in excess of its intended design capacity and is therefore, not in compliance with the European Union's Urban Wastewater Treatment Directive. Irish Water have begun to upgrade the current infrastructure to achieve compliance with the Urban Wastewater Treatment Directive (91/271/EEC), with aims to have these works completed in 2025.

H_27: Implementation of appropriate maintenance of the Stradbrook Stream watercourse and associated culverts to ensure flow is maintained and risk of flooding is not increased. This will include the removal of blockages and conduct of routine clearing.

10.6 Residual Impacts

Prior to mitigation, potential impacts to the surrounding waterbodies were considered to be 'significant' to 'profound' in most cases, largely on account of the designation status of the potentially affected waterbodies (nationally, European and internationally significant) located within the Zone of Influence of, and with hydrological connection to the proposed development.

However, the implementation of mitigation measures during the construction phase (as outlined in Section 10.5), along with good site management and construction practices will eliminate any significant impact on the environment and reduce significance to 'imperceptible' in all cases.

A similar conclusion is made within the NIS prepared for the Project, where it is stated that '*given the full and proper implementation of the mitigation prescribed in this NIS, the proposed development, either individually or in combination with other plans or projects, will not adversely affect the integrity of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC or the Dalkey Islands SPA*' (Roughan & O'Donovan Consulting Engineers, 2022.

10.7 Monitoring

10.7.1 Construction Phase

Visual monitoring will be undertaken during the construction by a Health, Safety & Environmental Officer to determine compliance with the suggested mitigation measures described in Section 10.5. Further, site records will be inspected to determine history of any contamination / spillages and how these were addressed. Improvements and lessons learnt may be a useful tool to ensure effectiveness.

Dedicated water quality monitoring of the Stradbrook Stream may be requested by EPA during the construction phase, to determine impact across the entire construction phase. This should be undertaken by a qualified environmental officer/manager with results reviewed by an independent Environmental Consultant, as required, and compared to relevant guidelines.

10.7.2 Operational Phase

A regular maintenance regime should be implemented by the developer to ensure that all environmental protection measures are maintained at the development, that all infrastructure is kept in good working condition, and that the surface water and drainage networks are tended to as appropriate to avoid flood risk.

10.8 Reinstatement

This is not considered applicable to this Chapter. No reinstatement works are proposed that would have effect to Hydrology.

10.9 Interactions

The most significant interactions for the assessment of hydrology impacts are those associated with biodiversity/ecology particularly where hydrological connection between the proposed development at surrounding Designated Sites is present. A reduction in water quality at these Designated Sites has the potential to cause effect to the Conservation Objectives for the Qualifying Interests of the sites, including both sensitive habitats and species.

Other interactions exist between the impacts identified to hydrology – surface water and those identified to 'Land, Soils, Geology and Hydrogeology (Chapter 9). A potential effect on the hydrology environment includes the excavation and removal of made ground and overburden which could potentially increase the sediment loading to the surface water environment. Further, contaminated or imported soil has the potential to run off during the construction phase and have negative impacts on surface water environments.

10.10 Cumulative Impacts

In the assessment of cumulative impacts for this EIAR, permitted/ongoing (nos. 14 identified) and planned projects (nos. 7 identified) were considered, represented by developments which consist of 50 residential units or more and located within 2km of the proposed development.

Cumulative impacts are those which accrue to key hydrological receptors as a result of incremental changes caused by other existing and proposed plans or projects together with those caused by the proposed development.

Cumulatively, the identified projects in combination with the proposed development may create added pressure upon the waterbodies present in the study area (where hydrological connection exists), however the combined impact is unlikely to be significant given the nature and scale of the identified projects and ability for all impacts to be sufficiently mitigated through best-practise construction techniques.

10.11 'Do-Nothing' Effect

Under the do-nothing effect, no direct disturbance to the hydrology regime would be noted. However, another consideration is that the site is currently susceptible to long-term contamination potential from concrete / steel leachate given the nature of the buildings as disused and subject to future disrepair and degradation. This may result in long-term effects to the surface water regime through run-off.

10.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in the preparation of this Chapter.

10.13 Conclusion

This Chapter was developed with the aid of various guidance, investigative and historical data as listed in the references as well as the experience and knowledge of the design team.

This chapter reviews the impacts to hydrology across the site during the construction and operational phase over several categories (e.g. leaking foul sewers, infrastructure malfunction, vehicle leaks etc.) is generally positive. The chapter refers to the detailed project-specific Natura Impact Statement developed by Roughan & O'Donovan Consulting Engineers which identifies the water quality impacts and mitigation measures on the Stradbrook Stream. The construction works in proximity to the Stradbrook Stream will incorporate mitigation measures such as silt fences, a clear 10m zone directly adjacent to the stream, an on-site Environmental Manager, containment of concrete wash down, provision of appropriate run-off treatment systems, bunding of fuel tanks, etc

It is concluded that where there are potential issues to the soils and geological environment the effects only range from slight to moderate and any impact from these is low to negligible ensuring the appropriate mitigation measures are applied where required.

The implementation of mitigation measures during the construction phase (as outlined in Section 10.5), along with good site management and construction practices will eliminate any significant impact on the environment and reduce residual impact significance to 'imperceptible' in all cases.

10.14 References

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Roughan & O'Donovan Consulting Engineers (2022). Stradbrook Stream Bridge, Monkstown, County Dublin. Natura Impact Statement.

11.0 AIR QUALITY AND CLIMATE

11.1 Introduction

This chapter assesses the likely air quality and climate impacts associated with the proposed residential development at Dalguise House, Monkstown, Co. Dublin. A full description of the development is available in Chapter 5 – Description of the Proposed Project.

This chapter was completed by Niamh Nolan, an environmental consultant in the air quality section of AWN Consulting Ltd. She has two years experience working in environmental consultancy focussing on air quality. She holds a BSocSci (Hons) in Social Policy and Geography from University College Dublin. She is an Associate Member of both the Institute of Air Quality Management and the Institution of Environmental Science. She has experience in mapping software primarily in QGIS and she specialises in the area of air quality, climate and sustainability. She has prepared air quality and climate impact assessments for numerous EIARs for a range of projects including commercial, residential and industrial developments.

11.2 Methodology

11.2.1 Criteria for Rating of Impacts

11.2.1.1 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 in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set (see Table 11.1 and Appendix 11.1).

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2011, which incorporate EU Directive 2008/50/EC, which has set limit values for NO_2, PM_{10} and $PM_{2.5}$, which are applicable in relation to this project (see Table 11.1). Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions (see Appendix 11.1).

Pollutant	Regulation [Note 1]	Limit Type	Value
Nitrogen Dioxide (NO_2)	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
		Critical level for protection of vegetation	30 µg/m^3 NO + NO_2

Pollutant	Regulation [Note 1]	Limit Type	Value
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/m³
		Annual limit for protection of human health	40 µg/m³
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health	25 µg/m³

[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

Table 11.1 Ambient Air Quality Standards

11.2.1.2 Dust Deposition Guidelines

The concern from a health perspective is focussed on particles of dust which are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$). The EU ambient air quality standards outlined in Table 11.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one-year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the Bergerhoff limit of 350 mg/(m^2*day) to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development.

11.2.1.3 Climate Agreements

Ireland is party to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Paris Agreement, which entered into force in 2016, is an important milestone in terms of international climate change agreements and includes an aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C. The aim is to limit global Greenhouse Gas ("**GHG**") emissions to 40 gigatonnes as soon as possible whilst acknowledging that peaking of GHG emissions will take longer for developing countries. Contributions to GHG emissions will be based on Intended Nationally Determined Contributions (INDCs) which will form the foundation for climate action

post 2020. Significant progress was also made in the Paris Agreement on elevating adaption onto the same level as action to cut and curb emissions.

In order to meet the commitments under the Paris Agreement, the EU enacted *Regulation (EU) 2018/842 on binding annual greenhouse gas 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* (the Regulation). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. Ireland's obligation under the Regulation is a 30% reduction in non-ETS greenhouse gas emissions by 2030 relative to its 2005 levels.

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, *inter alia*, 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, 2019a). 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). The plan contains similar elements as the 2019 CAP and aims to set out how Ireland can reduce our greenhouse gas emissions by 51% by 2030 (compared to 2018 levels) which is in line with the EU ambitions, and a longer-term goal of to achieving net-zero emissions no later than 2050. The 2021 CAP outlines that emissions from the Built Environment sector must be reduced to 4 – 5 $MtCO_2e$ by 2030 in order to meet our climate targets. This will require further measures in addition to those committed to in the 2019 CAP. This will include phasing out the use of fossil fuels for the space and water heating of buildings, improving the fabric and energy of our buildings, and promoting the use of lower carbon alternatives in construction.

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 for the Climate Action (Amendment) Bill 2019 in December 2019 (Government of Ireland 2019b) followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021) (hereafter referred to as the 2021 Climate Act) in July 2021 (Government of Ireland, 2021b). The 2021 Climate Act was prepared for the purposes of giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act 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*'. The 2021 Climate Act removes any reference to a national mitigation plan and instead refers to both the Climate Action Plan, as published in 2019, and a series of National Long Term Climate Action Strategies. In addition, the Environment Minister shall request each local authority to make a '*local authority climate action plan'* lasting five years and to specify the mitigation measures and the adaptation measures to be adopted by the local authority.

The Dun Laoghaire - Rathdown County Council Climate Change Action Plan 2019 – 2024 published in 2019 (Dun Laoghaire - Rathdown 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, better integration of transport and land use planning, increasing public bike facilities, developing public transport routes, development of flood resilient designs, promotion of the use of green infrastructure and waste prevention initiatives. The implementation of these measures will enable the Dun Laoghaire - Rathdown 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.

11.2.2 Construction Phase

11.2.2.1 Air Quality

The assessment focuses on identifying the existing baseline levels of PM_{10} and $PM_{2.5}$ in the region of the proposed development by an assessment of EPA monitoring data. Thereafter, the impact of the construction phase of the development on air quality was determined by a qualitative assessment of the nature and scale of dust generating construction activities associated with the proposed development.

Construction phase traffic also has the potential to impact air quality and climate. The UK Design Manual for Roads and Bridges (DMRB) guidance (UK Highways Agency, 2019a), 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. The TII guidance (2011) recommends the use of the UK guidance and was based on the previous version of the UK DMRB guidance (UK Highways Agency, 2007). This notes that the TII guidance should be adapted for any updates to the DMRB (see Section 1.1 of *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes, 2011)*. The following are the criteria outlined under the DMRB guidance:

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- A change in speed band; and,
- A change in carriageway alignment by 5m or greater.

The construction stage traffic does not meet the above scoping criteria and therefore, has been scoped out from any further assessment as there is no potential for significant impacts to air quality during construction as a result of traffic emissions.

11.2.2.2 Climate

The impact of the construction phase of the proposed development on climate was determined by a qualitative assessment of the nature and scale of GHG generating construction activities associated with the proposed development.

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact assessments, LA 114 Climate. The following scoping criteria are used to determine whether a detailed climate assessment is required for a proposed project. If any of the road links impacted by the proposed development meet the below criteria then further assessment is required:

- A change of more than 10% in AADT;
- A change of more than 10% to the number of HDVs; and / or
- A change in daily average speed of more than 20 km/hr.

The construction phase traffic has been reviewed and none of the impacted road links meet the above criteria. Therefore, a detailed climate assessment has been scoped out as there is no potential for significant impacts to climate from construction traffic emissions.

11.2.3 Operational Phase

11.2.3.1 Air Quality

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed Project. The operational

phase air quality assessment has been carried out following procedures described in the publications by the EPA (2015; 2022) and using the methodology outlined in the guidance documents published by the UK Highways Agency (2019a) and UK Department of Environment Food and Rural Affairs (DEFRA) (2016; 2018). Transport Infrastructure Ireland (TII) reference the use of the UK Highways Agency and DEFRA guidance and methodology in their document *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (2011). This approach is considered best practice in the absence of Irish guidance and can be applied to any development that causes a change in traffic.

In 2019 the UK Highways Agency DMRB air quality guidance was revised with *LA 105 Air Quality* replacing a number of key pieces of guidance (HA 207/07, IAN 170/12, IAN 174/13, IAN 175/13, part of IAN 185/15). This revised document outlines a number of changes for air quality assessments in relation to road schemes but can be applied to any development that causes a change in traffic. Previously the DMRB air quality spreadsheet was used for the majority of assessments in Ireland with detailed modelling only required if this screening tool indicated compliance issues with the EU air quality standards. Guidance from Transport Infrastructure Ireland (TII, 2011) recommends the use of the UK Highways Agency DMRB spreadsheet tool for assessing the air quality impacts from road schemes. However, the DMRB spreadsheet tool was last revised in 2007 and accounts for modelled years up to 2025. Vehicle emission standards up to Euro V are included but since 2017, Euro 6d standards are applicable for the new fleet. In addition, the model does not account for electric or hybrid vehicle use. Therefore, this a somewhat outdated assessment tool. The LA 105 guidance document states that the DMRB spreadsheet tool may still be used for simple air quality assessments where there is unlikely to be a breach of the air quality standards. Due to its use of a “dirtier” fleet, vehicle emissions would be considered to be higher than more modern models and therefore any results will be conservative in nature and will provide a worst-case assessment.

The 2019 UK Highways Agency DMRB air quality revised guidance *LA 105 Air Quality* states that modelling should be conducted for NO_2 for the base, opening and design years for both the do minimum (do nothing) and do something scenarios. Modelling of PM_{10} is only required for the base year to demonstrate that the air quality limit values in relation to PM_{10} are not breached. Where the air quality modelling indicates exceedances of the PM_{10} air quality limits in the base year then PM_{10} should be included in the air quality model in the do minimum and do something scenarios. Modelling of $PM_{2.5}$ is not required as there are currently no issues with compliance with regard to this pollutant. The modelling of PM_{10} can be used to show that the project does not impact on the $PM_{2.5}$ limit value as if compliance with the PM_{10} limit is achieved then compliance with the $PM_{2.5}$ limit will also be achieved. Historically modelling of carbon monoxide (CO) and benzene was required however, this is no longer needed as concentrations of these pollutants have been monitored to be significantly below their air quality limit values in recent years, even in urban centres (EPA, 2021a).

The key pollutant reviewed in this assessment is NO_2. Concentrations of PM_{10} have been modelled for the base year to indicate that there are no potential compliance issues. Modelling of operational NO_2 concentrations has been conducted for the do nothing and do something scenarios.

The TII guidance (2011) states that the assessment must progress to detailed modelling if:

- Concentrations exceed 90% of the air quality limit values when assessed by the screening method; or
- Sensitive receptors exist within 50m of a complex road layout (e.g. grade separated junctions, hills etc).

The UK DMRB scoping criteria outlined above in Section 11.2.2.1 has been used in the current assessment to determine the road links required for inclusion in the modelling assessment. Sensitive receptors within 200m of impacted road links are included within the modelling assessment. Pollutant concentrations are calculated at these sensitive receptor locations to determine the impact of the proposed development in terms of air quality. The guidance 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 (UK Highways Agency, 2019a).

The TII guidance (2011) 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. 1 no. high sensitivity residential receptor (R1) was included in the modelling assessment and is detailed in Figure 11.1. This receptor was chosen as it is within 200m of affected road links which meet the air quality assessment criteria outlined in Section 11.2.2.1. The UK DMRB guidance (2019a) states that road links at a distance of greater than 200m from a sensitive receptor will not influence pollutant concentrations at the receptor.

The following model inputs are required to complete the assessment using the DMRB spreadsheet tool: road layouts, receptor locations, annual average daily traffic movements (AADT), percentage heavy goods vehicles (%HGV), annual average traffic speeds and background concentrations. Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the worst-case sensitive receptors using generic meteorological data. The DMRB model uses conservative emission factors, the formulae for which are outlined in the DMRB Volume 11 Section 3 Part 1 – HA 207/07 Annexes B3 and B4. These worst-case road contributions are then added to the existing background concentrations to give the worst-case predicted ambient concentrations. The worst-case 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 *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (2011) 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 both the absolute and relative impact of the proposed development. The TII significance criteria are outlined in Appendix 10 of the TII guidance and have been adopted for the proposed development. The significance criteria are based on NO_2 and PM_{10} as these pollutants are most likely to exceed the annual mean limit values (40 µg/m^3).

Conversion of NO_x to NO_2

NO_X (NO + NO_2) is emitted by vehicles exhausts. The majority of emissions are in the form of NO, however, with greater diesel vehicles and some regenerative particle traps on HGV's the proportion of NO_X emitted as NO_2, rather than NO is increasing. With the correct conditions (presence of sunlight and O_3) emissions in the form of NO, have the potential to be converted to NO_2.

Transport Infrastructure Ireland states the recommended method for the conversion of NOx to NO_2 in "*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*" (2011). The TII guidelines recommend the use of DEFRAs NOx to NO_2 calculator (2020) which was originally published in 2009 and is currently on version 8.1. This calculator (which can be downloaded in the form of an excel spreadsheet) accounts for the predicted availability of O_3 and proportion of NOx emitted as NO for each local authority across the UK. O_3 is a regional pollutant and therefore concentrations do not vary in the same way as concentrations of NO_2 or PM_{10}.

The calculator includes Local Authorities in Northern Ireland and the TII guidance recommends the use of 'Armagh, Banbridge and Craigavon' as the choice for local authority when using the calculator. The choice of Craigavon provides the most suitable relationship between NO_2 and NO_x for Ireland. The "All Other Urban UK Traffic" traffic mix option was used.

Update to NO_2 Projections using DMRB

In 2011 the UK DEFRA published research (Highways England, 2013) on the long term trends in NO_2 and NO_X for roadside monitoring sites in the UK. This study marked a decrease in NO_2 concentrations between 1996 and 2002, after which the concentrations stabilised with little reduction between 2004 and 2010. The result of this is that there now exists a gap between projected NO_2 concentrations which UK DEFRA previously published and monitored concentrations. The impact of this 'gap' is that the DMRB screening model can under-predict NO_2 concentrations for predicted future years. Subsequently, the UK Highways Agency published an Interim advice note (IAN 170/12) in order to correct the DMRB results for future years. This methodology has been used in the current assessment to predict future concentrations of NO_2 as a result of the proposed Project.

Traffic Data Used in Modelling Assessment

Traffic flow information was obtained from Roughan & O'Donovan Consulting Engineers for the purposes of this assessment. Data for the Do Nothing and Do

Something scenarios for the base year 2022, opening year 2024 and design year 2039 were provided. The traffic data is detailed in Table 11.2 with the % HGV shown in parenthesis below the AADT. Only road links that met the DMRB scoping criteria and that were within 200m of receptors were included in the modelling assessment. Background concentrations have been included as per Section 11.3.2 of this chapter based on available EPA background monitoring data (EPA, 2021a).

Road Name	Speed (kph)	Base	Do Nothing		Do Something	
		2022	2024	2039	2024	2039
Monkstown Road	50	13,500 (1.5%)	14,000 (1.5%)	16,150 (1.5%)	15,350 (1.2%)	17,500 (1.2%)

Table 11.2: Traffic Data used in Air Modelling Assessment

Figure 11.1: Location of Sensitive Receptors Used in Air Quality Modelling Assessment

11.2.3.2 Air Quality Impact on Ecological Sites

For routes that pass within 2 km of a designated area of conservation (either Irish or European designation) the TII requires consultation with an ecologist (TII, 2011). However, in practice the potential for impact to an ecological site is highest within 200m of the proposed scheme and when significant changes in AADT (>5%) occur. Only sites that are sensitive to nitrogen deposition should be included in the assessment. In addition, the UK Highways Agency (2019) states that a detailed

assessment does not need to be conducted for areas that have been designated for geological features or watercourses.

Transport Infrastructure Ireland's *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009) and *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DEHLG, 2010) provide details regarding the legal protection of designated conservation areas.

If both of the following assessment criteria are met, an assessment of the potential for impact due to nitrogen deposition should be conducted: -

- A designated area of conservation is located within 200 m of the proposed development.
- A significant change in AADT flows (>5%) will occur.

The South Dublin Bay and River Tolka Estuary Special Area of Protection (SPA) (site code 004024) and South Dublin Bay Proposed Natural Heritage Area (pNHA) (site code 000210) are just over 200m from the road links impacted by the proposed development. Therefore, there is no potential for significant impacts to ecology as a result of nitrogen oxide emissions or nitrogen deposition and an assessment is not required.

11.2.3.3 Climate

Ireland has annual GHG targets which are set at an EU level and need to be complied with in order to reduce the impact of climate change. Impacts to climate as a result of GHG emissions are assessed against the targets set out by the EU under *Regulation (EU) 2018/842 on binding annual greenhouse gas 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*, which has set a target of 30% reduction in non-ETS sector GHG emissions by 2030 relative to 2005 levels.

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 11.3.3). The impact of the proposed development on climate is determined in relation to this baseline. Road traffic associated with the proposed development will emit certain volumes of carbon dioxide (CO_2).

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (UK Highways Agency, 2019b). The following scoping criteria are used 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 meets one or more of the below criteria, then further assessment is required.

- a change of more than 10% in AADT;
- a change of more than 10% to the number of heavy duty vehicles; and

- a change in daily average speed of more than 20 km/hr.

None of the road links impacted by the proposed development meet the scoping criteria above and therefore a detailed assessment has been scoped out as there is no potential for significant impacts to climate as a result of traffic emissions.

The EU guidance (2013) also states that indirect GHG emissions as a result of a proposed development must be considered. These include emissions associated with energy usage. The Sustainability Report/ Energy Statement and Lifecycle Report for the proposed development have been reviewed to inform the operational phase climate assessment. A number of measures have been incorporated into the overall design of the development to reduce the impact to climate, where possible see the Sustainability Report/ Energy Statement and the Lifecycle Report prepared in support of this planning application for further detail (see Section 11.4.2.2).

11.3 Baseline Environment

11.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality are the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is at Dublin Airport., which is located approximately 15.6 km north of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 11.2). The predominant wind direction is westerly to south-westerly over the period 2017 - 2021, with a mean wind speed of 5.5 m/s over the period 1981 – 2010 (Met Éireann, 2022).

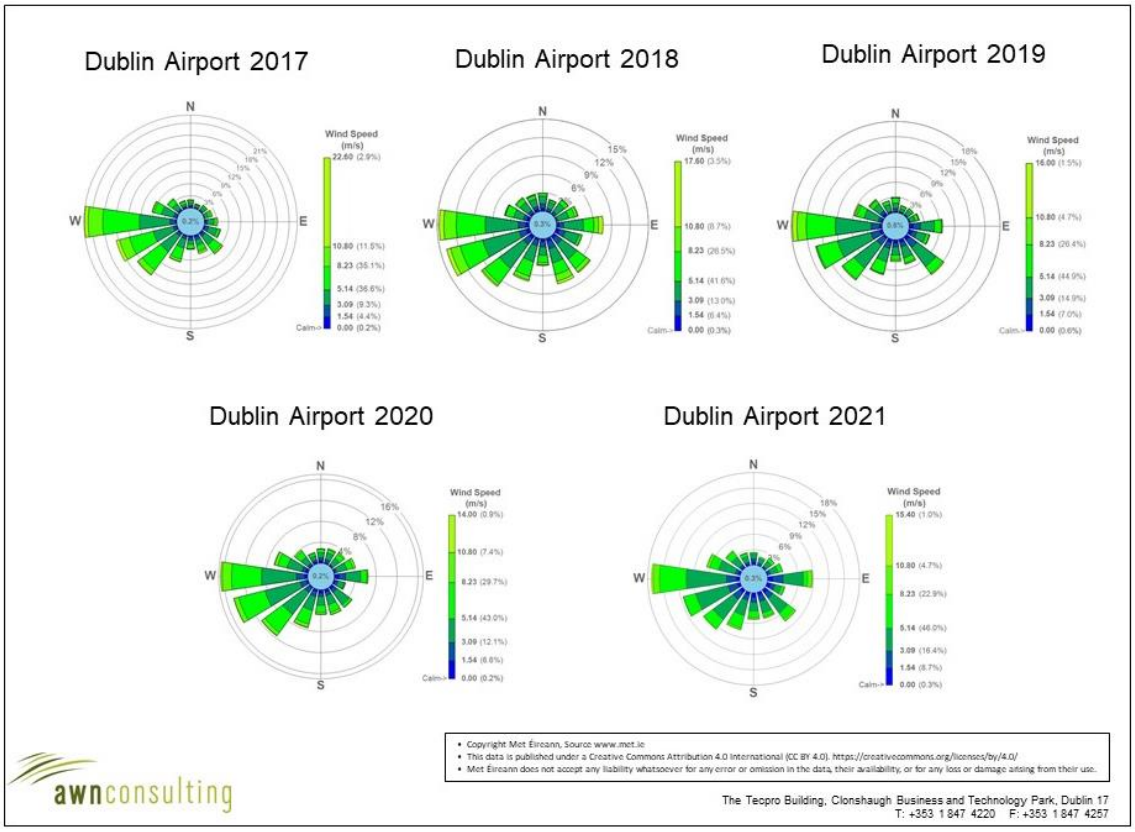

Figure 11.2: Dublin Airport Windrose 2017 – 2021

11.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality in Ireland is '*Air Quality In Ireland 2020*' (EPA, 2021a). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2022a).

As part of the implementation of the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2021a). Dublin is defined as Zone A, and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone A (EPA, 2021a) . The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating, etc.).

In 2020 the EPA reported (EPA, 2021a) 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 not been included in the baseline section and previous long-term data has been used to determine baseline levels of pollutants in the vicinity of the proposed project.

Long-term NO_2 monitoring was carried out at the Zone A suburban locations of Rathmines, Ballyfermot, Dún Laoghaire and Swords for the period 2015 – 2019 (EPA, 2021a). Long-term average concentrations are significantly below the annual average limit of 40 µg/m^3 for the suburban locations. Average results range from 13 – 22 µg/m^3. The NO_2 annual average for this five year period suggests an upper average limit of no more than 22 µg/m^3 (Table 11.3) as a background concentration for the suburban locations. The monitoring site in Dún Laoghaire is approximately 1 km south-east of the proposed development and concentrations would be representative of the location. Concentrations of NO_2 at the Dún Laoghaire site ranged from 15 – 19 µg/m^3 over the period 2015 – 2019. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the proposed development is 19 µg/m^3.

Station	Station Classification	Averaging Period Note 1	Year				
			2015	2016	2017	2018	2019
Rathmines	Suburban Background	Annual Mean NO_2 (µg/m^3)	18	20	17	20	22
		99.8th%ile 1-hr NO_2 (µg/m^3)	105	88	86	87	102
Ballyfermot	Suburban Background	Annual MeanNO_2 (µg/m^3)	16	17	17	17	20
		99.8th%ile 1-hr NO_2 (µg/m^3)	127	90	112	101	101
Dún Laoghaire	Suburban Background	Annual Mean NO_2 (µg/m^3)	16	19	17	19	15
		99.8th%ile 1-hr NO_2 (µg/m^3)	91	105	101	91	91
Swords	Suburban Background	Annual Mean NO_2 (µg/m^3)	13	16	14	16	15
		99.8th%ile 1-hr NO_2 (µg/m^3)	93	96	79	85	80

Note 1 Annual average limit value of 40 µg/m^3 and hourly limit value of 200 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).

Table 11.3: Trends in Zone A Air Quality – NO_2

Continuous PM_{10} monitoring was carried out at the Zone A locations of Rathmines, Dún Laoghaire, Ballyfermot and Phoenix Park from 2015 – 2019. These showed an upper average limit of no more than 15 µg/m^3 (Table 11.4). Levels range from 9 – 16 µg/m^3 over the five year period, with, at most, 9 exceedances of the 24-hour limit value of 50 µg/m^3 in Rathmines in 2019 (35 exceedances are permitted per year) (EPA, 2021a). Sufficient data is available for the Dún Laoghaire station to observe long-term trends in the data, which suggest an upper average annual mean value of at most 13 µg/m^3 as a background concentration. Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the proposed development is 16 µg/m^3.

Station	Station Classification	Averaging Period	Year				
			2015	2016	2017	2018	2019
Ballyfermot	Suburban Background	Annual Mean PM_{10} (µg/m^3)	12	11	12	16	14
		24-hr Mean > 50 µg/m^3 (days)	3	0	1	0	7
Dún Laoghaire	Suburban Background	Annual Mean PM_{10} (µg/m^3)	13	13	12	13	12
		24-hr Mean > 50 µg/m^3 (days)	3	0	2	0	2
Rathmines	Suburban Background	Annual Mean PM_{10} (µg/m^3)	15	15	13	15	15
		24-hr Mean > 50 µg/m^3 (days)	5	3	5	2	9
Phoenix Park	Urban Background	Annual Mean PM_{10} (µg/m^3)	12	11	9	11	11
		24-hr Mean > 50 µg/m^3 (days)	2	0	1	0	2

Note 1 Annual average limit value of 40 µg/m^3 and 24-hour limit value of 50 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).

Table 11.4: Trends in Zone A Air Quality – PM_{10}

Monitoring of both PM_{10} and $PM_{2.5}$ takes place at the station in Rathmines which allows for the $PM_{2.5}/PM_{10}$ ratio to be calculated. Average $PM_{2.5}$ levels in Rathmines over the period 2015 – 2019 ranged from 9 - 10 µg/m^3, with a $PM_{2.5}/PM_{10}$ ratio ranging from 0.60 – 0.68 (EPA, 2021a). Based on this information, a conservative ratio of 0.7 was used to generate an existing $PM_{2.5}$ concentration in the region of the proposed development of 11.2 µg/m^3.

Background concentrations for the Opening Year 2024 and Design Year of 2039 have been calculated for the local air quality assessment. These have used current estimated background concentrations and the year on year reduction factors provided by Transport Infrastructure Ireland in the *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (2011) and the UK Department for Environment, Food and Rural Affairs LAQM.TG(16) (2018).

11.3.3 Climate Baseline

Anthropogenic emissions of greenhouse gases (GHGs) in Ireland included in the European Union's Effort Sharing Regulation (ESR) (EU 2018/842) are outlined in the most recent review

by the EPA which details provisional emissions up to 2021 (EPA, 2022b). The greenhouse gas emission inventory for 2021 is the first of ten years over which compliance with targets set in the ESR will be assessed. This Regulation sets 2030 targets for emissions outside of the Emissions Trading Scheme (known as ESR emissions) and annual binding national limits for the period 2021-2030. Ireland's target is to reduce ESR emissions by 30% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. Ireland's ESR emissions annual limit for 2021 is 43.48 Mt CO_2eq[2]. Ireland's provisional 2021 GHG ESR emissions are 46.19 Mt CO_2eq, this is 2.71 Mt CO_2eq more than the annual limit for 2021 (EPA, 2022b). Agriculture continues to be the largest contributor to overall emissions at 37.5% of the total. Transport, energy industries and the residential sector are the next largest contributors, at 17.7%, 16.7% and 11.4%, respectively. GHG emissions for 2021 are estimated to be 4.7% higher than emissions in 2020, this is due to a gradual lifting of covid restrictions and an increase in the use of coal and less renewables within electricity generation. Ireland's GHG emissions have increased by 11.4% from 1990 – 2021.

Provisional National total emissions (including LULUCF) for 2021 are 69.29 Mt CO_2eq, these have used 23.5% of the 295 Mt CO_2eq Carbon Budget for the five-year period 2021-2025. This leaves 76.5% of the budget available for the succeeding four years, requiring an 8.4% average annual emissions reduction from 2022-2025 to stay within budget.

The EPA 2022 GHG Emissions Projections Report for 2021 – 2040 (EPA, 2022c) provides an assessment of Ireland's total projected greenhouse gas (GHG) emissions from 2021 to 2040, using the latest Inventory data for 2020 and provides an assessment of Ireland's progress towards achieving its National ambitions under the Climate Action and Low Carbon Development (Amendment) Act 2021 (Government of Ireland, 2021) and EU emission reduction targets for 2030 as set out under the EU Effort Sharing Regulation (ESR) 2018/842. Two scenarios are assessed – a "*With Existing Measures*" (WEM) scenario, which is a projection of future emissions based on the measures currently implemented and actions committed to by Government, and a "*With Additional Measures*" (WAM) scenario, which is the projection of future emissions based on the measures outlined in the latest Government plans at the time Projections are compiled. This includes all policies and measures included in the WEM scenario, plus those included in government plans but not yet implemented.

The EPA report states under the "*With Existing Measures"* scenario, the projections indicate that Ireland will cumulatively exceed its ESR emissions allocation by 52.3 Mt CO_2eq over the 2021-2030 period even with full use of the flexibilities available. Under the "*With Additional Measures scenario"*, the projections indicate that Ireland can achieve compliance under the ESR over the 2021-2030 period using both flexibilities but only with full implementation of the 2021 Climate Action Plan. Both projected scenarios indicate that implementation of all climate plans and policies, plus further new measures, are needed for Ireland to meet the 51 per cent emissions reduction target and put the country on track for climate neutrality by 2050 (EPA, 2022c).

[2] Mt CO_2eq – million tonnes carbon dioxide equivalent

11.4 Potential Impacts of the Proposed Project

11.4.1 Construction Phase

11.4.1.1 Air Quality

The greatest potential impact on air quality during the construction phase of the proposed Project 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 11.3.1) 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 Éireann, 2022) and, therefore, it can be determined that dust generation will be reduced over 50% of the time.

The proposed development can be considered moderate in scale due to the overall site area involved and therefore there is the potential for significant dust soiling 50 m from the source (TII, 2011) (Table 11.5). There are a number of high sensitivity residential receptors bordering the site. In the absence of mitigation there is the potential for moderate, direct, negative, short-term impacts to nearby sensitive receptors as a result of dust emissions from the proposed development.

Source		**Potential Distance for Significant Effects (Distance from source)**		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large construction sites with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites with limited use of haul routes	25m	10m	10m

Source: Appendix 8: Assessment of Construction Impacts taken from "*Guidelines for the treatment of Air Quality During the Planning & Construction of National Road Schemes*" (TII, 2011)

Table 11.5 Assessment Criteria for the Impact of Dust Emissions from Construction Activities with Standard Mitigation in Place

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 has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed Project satisfy the DMRB assessment criteria in Section 11.2.2.1. It can therefore be

determined that the construction stage traffic will have an imperceptible, direct, neutral and short-term impact on air quality.

11.4.1.2 Climate

A number of GHG emissions will occur during the demolition and construction phase of the proposed Project. Construction vehicles, generators, etc., will give rise to CO_2 and N_2O emissions. The IAQM *Guidance on the Assessment of Dust from Demolition and Construction* (2014) states that site traffic and plant is unlikely to make a significant impact on climate. As per Section 11.3.3, Ireland had total GHG emissions of 46.19 Mt CO_2eq in 2021 emissions from the construction phase of the proposed development will be a small fraction of this. Therefore, the impact of the construction phase on climate is considered to be imperceptible, direct, neutral and short-term.

11.4.1.3 Human Health

Dust emissions from the construction phase of the proposed Project have the potential to impact human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Table 11.5, PM_{10} emissions can occur within 55 m of the site for a development of this scale. There are a number of high sensitivity receptors bordering the site a number of which are within 15 m of the site boundary. Therefore, in the absence of mitigation there is the potential for slight, direct, negative, short-term impacts to human health as a result of the proposed Project.

11.4.2 Operational Phase

11.4.2.1 Air Quality

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The impact of NO_2 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.

Transport Infrastructure Ireland's document *Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes* (2011) detail a methodology for determining air quality impact significance criteria for road schemes and this 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 NO_2 in the opening year 2024 are shown in Table 11.6 and for design year 2039 are shown in Table 11.7. The annual average concentration is in compliance with the limit value at all worst-case receptors in 2024 and 2039 with concentrations of NO_2 reaching at

most 59% and 57% of the annual limit value in 2024 and 2039 respectively in the do-something scenario. There are some increases in traffic volumes between 2024 and 2039 therefore any reduction in concentrations is due to decreased background values. In addition, the hourly limit value for NO_2 is 200 µg/m^3 and is expressed as a 99.8th percentile (i.e. it must not be exceeded more than 18 times per year). The maximum 1-hour NO_2 concentration is not predicted to be exceeded in any modelled year (Table 11.8).

The impact of the proposed development on annual mean NO_2 concentrations can be assessed relative to "Do Nothing (DN)" levels. Relative to baseline levels, there is predicted to be an imperceptible increase in concentrations at receptor R1. Concentrations will increase by at most 0.27 µg/m^3 in 2024 and 0.04 µg/m^3 in 2039. Using the assessment criteria outlined in Appendix 10 of the TII guidance (TII, 2011) the impact of the proposed development in terms of NO_2 is considered negligible. Therefore, the overall impact of NO_2 concentrations as a result of the proposed development is long-term, negative and imperceptible.

Concentrations of PM_{10} were modelled for the baseline year of 2022 The modelling showed that concentrations were in compliance with the annual limit value of 40 µg/m^3, therefore, further modelling for the opening and design years was not required. Concentrations reached at most 0.84 µg/m^3. When a background concentration of 16 µg/m^3 is included, the overall impact is 42% of the annual limit value at the worst case receptor.

The impact of the proposed development on ambient air quality in the operational stage is considered long-term, direct, localised, negative and imperceptible.

Receptor	Opening Year 2024				
	DN	DS	DS-DN	Magnitude	Description
R1	23.4	23.7	0.27	Imperceptible Increase	Negligible

Table 11.6 Predicted Annual Mean NO_2 Concentrations – Opening Year 2024 (µg/m^3)

Receptor	Design Year 2039				
	DN	DS	DS-DN	Magnitude	Description
R1	22.9	23.0	0.04	Imperceptible Increase	Negligible

Table 11.7 Predicted Annual Mean NO_2 Concentrations – Design Year 2039 (µg/m^3)

Receptor	Opening Year 2024		Design Year 2039	
	DN	DS	DN	DS
R1	81.9	82.8	80.2	80.4

Table 11.8 Predicted 99.8th percentile of Daily Maximum 1-hour NO_2 Concentrations (µg/m^3)

11.4.2.2 Climate

The impact of the proposed development on emissions of CO_2 impacting climate were assessed using the DMRB screening criteria as outlined in Section 11.2.1.2 (UK

Highways Agency, 2019b). It was determined that a detailed assessment of CO_2 emissions from traffic associated with the proposed development can be screened out as no road links can be classed as impacted. Therefore, the likely overall magnitude of the changes on climate in the operational stage is imperceptible, neutral and long-term.

Climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. As a result of this there is the potential for flooding related impacts on site in future years. A detailed flood risk assessment has been undertaken as part of this planning application and adequate attenuation and drainage have been provided for to account for increased rainfall in future years.

The flood risk assessment includes an assessment of the risk posed by both fluvial and coastal flooding. The mitigation measures outlined in this report include minimum floor levels and minimum levels of site protection during construction. This means construction will not take place below a certain ground level to reduce the risk of flooding. These measures, along with adequate attenuation and drainage for the proposed development means the impact of the proposed development on climate will be imperceptible.

In addition, the proposed development has been designed to reduce the impact to climate where possible. The development will be Nearly Zero Energy Building (NZEB) compliant in accordance with the Part L 2021 requirements as appropriate. Each building will have a Building Energy Rating (BER) that will comply with the Part L requirements with a BER of A1 being targeted for the residential units. Building materials with a high durability and low future maintenance requirement will be chosen where possible to reduce the need for replacement and significant maintenance in the future which will in turn reduce the embodied carbon of the development during operation.

The following measures, or similar will be incorporated into the proposed development to achieve a more energy efficient (i.e. less carbon intensive) design. All measures will be reviewed at the detailed design stage and the most appropriate options will be implemented:

- UV free-LED fittings and timer controls to improve the impact lighting may have on climate.
- A central building energy management system (BEMS) will be used to check metering to monitor and optimise substantive energy use.
- High performance U-values;
- Improved air tightness;
- Improved thermal transmittance and thermal bridging;
- Use of renewable technologies to ensure energy consumption is in line with the Part L 2021 requirements these include photovoltaic (PV) panels and heat pumps;

Further details of the measures to be incorporated into the design of the development are outlined within the Sustainability Report/ Energy Statement and Lifecycle Report prepared in support of this planning application.

11.4.2.3 Human Health

Traffic related air emissions have the potential to impact air quality which can affect human health. 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. It can be determined that the impact to human health during the operational stage is long-term, negative and imperceptible.

11.5 Mitigation Measures

11.5.1 Construction Phase

11.5.1.1 Air Quality

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan. The key aspects of controlling dust are listed below. Full details of the Dust Management Plan can be found in Appendix 11.2. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site.

In summary the measures which will be implemented will include:

AC_1: Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.

AC_2: Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

AC_3: Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

AC_4: Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph.

AC_5: Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.

AC_6: Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.

AC_7: During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

11.5.1.2 Climate

Construction stage traffic and embodied energy of construction materials are expected to be the dominant source of greenhouse gas emissions as a result of the construction phase of the development. Construction vehicles, generators etc., may give rise to some CO_2 emissions. However, due to short-term nature of these works, the impact on climate will not be significant.

Nevertheless, some site-specific mitigation measures can be implemented during the construction phase of the proposed development to ensure emissions are reduced further.

AC_8: The prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.

AC_9: Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.

11.5.2 Operational Phase

The impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no site-specific mitigation measures are required.

The proposed development has been designed to minimise the impact to climate where possible during operation. Details of the measures to be incorporated into the design of the development are outlined in the Sustainability Report/ Energy Statement and Lifecycle Report prepared in support of this planning application.

11.6 Residual Impacts

11.6.1 Construction Phase

11.6.1.1 Air Quality

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Management Plan (Appendix 11.2). Provided the dust minimisation measures outlined in the plan are adhered to, the predicted residual air quality impacts during the construction phase are short-term, direct, negative, localised and imperceptible.

11.6.1.2 Climate

According to the IAQM guidance (2014), Site traffic and plant are unlikely to make a significant impact on climate during the construction phase. Therefore, the predicted residual impact on climate of the construction phase is considered to be neutral, direct, imperceptible and short-term.

11.6.1.3 Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed Project, which will focus on the proactive control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed Project will ensure that the impact complies with all EU ambient air quality legislative limit values which are based on the protection of human health (see Table 11.1). Therefore, the predicted residual impact of construction of the proposed Project is negative, direct, short-term and imperceptible with respect to human health.

11.6.2 Operational Phase

11.6.2.1 Air Quality

Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the UK DMRB model. The modelling assessment determined that the change in emissions of NO_2 at nearby sensitive receptors as a result of the proposed development will be imperceptible. Therefore, the operational phase impact to air quality is long-term, direct, localised, negative and imperceptible.

11.6.2.2 Climate

The traffic associated with the operational phase of the proposed development is below the criteria requiring a detailed climate assessment. As detailed above, the design of the proposed development includes numerous features that are expected to mitigate its operational carbon footprint, including energy efficiency measures and

bicycle-friendly design. The residual impact to climate during the operational phase is predicted to be long-term, direct, neutral and imperceptible.

11.6.2.3 Human Health

As the air dispersion modelling has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are long-term, negative and imperceptible.

11.7 Monitoring

11.7.1 Construction Phase

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development will take place to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days).

11.7.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to air quality and climate are predicted to be imperceptible.

11.8 Reinstatement

Not applicable to air quality and climate.

11.9 Interactions

An adverse impact due to air quality in either the construction or operational phase has the potential to cause human health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact complies with all ambient air quality legislative limits and, therefore, that the predicted residual impact is short-term, direct, negative and imperceptible during the construction phase, and long-term, direct, negative and imperceptible during the operational phase.

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in AADT on roads close to the site. In this assessment, the impact of the

interactions between traffic and air quality during both construction and operational phases, are considered to be imperceptible.

With the appropriate mitigation measures to prevent fugitive dust emissions (refer to Appendix 11.2), it is predicted that there will be no significant interaction between air quality and land and soils.

As discussed above, climate change has the potential to increase flood risk over time. However, adequate attenuation and drainage have been provided for to account for increased rainfall in future years, as part of the design of the proposed development, and it has been concluded that the associated impact will be long-term, direct, localised, neutral and imperceptible.

No other noteworthy interactions with air quality and climate have been identified.

11.10 Cumulative Impacts

11.10.1 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 350 m, then there is the potential for cumulative construction dust impacts. A review of recent planning permissions for the area has been conducted as per Chapter 21: Cumulative Impacts.

Table 11.9 outlines the committed (permitted/ under construction) developments surrounding the proposed development. The following sites are within 350m of the proposed development and have the potential for coinciding construction phases: D17A/0590 + ABP-301533-18 and D19A/0378 + ABP-305843-19 while the planned development D22A/0070 + 313363-22 is also within 350m of the proposed development.

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development	Distance to Dalguise House
D17A/0590+ABP-301533-18	Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	12th April 2018. Granted after appeal on 7th January 2019	Residential development consisting of the demolition of the existing nursing home and 5 no. studio apartments and the construction of a total of 56 no. residential units in 2 no. apartment blocks 76 car parking spaces, 5 motorcycle spaces and 41 bicycle spaces; 5 visitor car spaces and 26 bicycle spaces at surface level	Adjoining Dalguise House: < 50 metres
D19A/0378+ABP-305843-19	Former Richmond Cheshire Home,	05 Jun 2019. Granted after appeal on	Permission for revisions to a residential development previously permitted	Adjoining Dalguise

	Richmond Park, Monkstown, Co Dublin	26th May 2020	under Reg. Ref. D17A/0590 / ABP-301533-18. 72 no. residential units in these 2 no. apartment blocks. 79 car parking spaces, 7 motorcycle spaces and 64 bicycle spaces	House: < 50 metres
ABP30380419	St. Teresa's House/Centre and St. Teresa's Lodge (Protected Structures), Temple Hill, Monkstown, Blackrock, Co. Dublin.	10th June 2019	294 no. apartments, conversion of St. Teresa's House, dismantling and relocation of St. Teresa's Lodge,	1.2 km
ABP31232521	3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin	14th April 2022	New residential and mixed use scheme of 493 residential units Including the subdivision, conversion and re-use of 'St. Teresa's House' the dismantling, relocation and change of use from residential to café of 'St. Teresa's Lodge' within the site development area.	1.2 km
ABP30887720	Former Europa Garage Site, Newtown Avenue, Blackrock, Co. Dublin	12th April 2021	Development of 101 no. apartments	1.3 km
D17A/0137	Newtown Avenue, Blackrock, Co. Dublin. This site is known as the 'Former Europa Garage site'	12th April 2017 (after appeal)	Demolition of the garage buildings on site. The residential scheme shall provide for 51 no. residential units	1.3 km
D21A/0958	Former Europa Garage Site, Newtown Avenue, Blackrock, Co Dublin	20th April 2022	Residential development providing 91 residential units	1.3 km
ABP-304682-19	Previously permitted Blocks 2 and 3, Cualanor, Glenageary, Upper Road, Co. Dublin.	30th August 2019	368 no. apartments and associated site works.	c.1.3km
ABP30894620	Lands adjacent and to the rear of Cluain Mhuire Family Centre, Newtownpark Avenue, Blackrock, Co. Dublin	15th April 2021	Demolition of a single storey shed, construction of 140 no. apartments	1.4 km

ABP-304249-19	Old School House, Eblana Avenue, Dun Laoghaire, Co. Dublin.	26th July 2019	Demolition of existing buildings on site, construction of 208 no. Build to Rent Shared Living Residential Development, cafe/kiosk and associated site works.	c.1.5km
ABP-308046-20	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	16th December 2020	Alterations to Phase 1 permission for 45 no. apartments from second to fourth floor permitted under Reg.Ref: D17A/0950 and ABP-300745-18 to include the provision of 57 no. additional apartments as an extension to Phase 1, the subject application relates to a total of 102 no. apartments.	c.1.85km
D21A/0706 + ABP -313240-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	Granted 15th March 2022. 3rd party appeal to ABP lodged 5th April 2022.	The proposal relates to a Phase 2A residential development of 41 no. apartments and the allocation of 60 no. car spaces.	c.1.85km
ABP30733220	Dean's Grange Road, Deansgrange, Co. Dublin	20th September 2020	Demolition of existing buildings, construction of 151 no. apartments	1.9 km
D18A/1184+ABP-305265-19	Junction of, Fleurville Road and, Newtownpark Avenue, and abutting, Annaville Avenue to the east, Blackrock, Co. Dublin	29th July 2019. Granted after appeal on 13th Feb 2020	Residential development consisting of 68 no. apartments	2 km

Table 11.9 List of Committed (Permitted/ Under Construction) Developments surrounding the Proposed Project

The below projects are planned projects that are at various stages of the planning process (Table 11.10). The key distinction from the projects listed above is that they do not have planning permission at the time of writing.

DLRCC/ ABP Reg. Ref.	Address	Lodgement Date/ Status	Overview of Development	Distance to Dalguise House
D22A/0070 + ABP-313363-22	Richmond Cheshire Home, Richmond Park, Monkstown, Co. Dublin	Planning Application Lodged 31st January 2022. Refused by DLRCC and is now subject of	Residential development comprising of 96 no. apartment units	Adjoining subject site: <50 metres

		a first party appeal to ABP.		
N/A	Stradbrook/Sallynoggin Streams	Tender documents for a CCTV and flow survey have been prepared which is envisaged to be completed during winter 2021-2022.	Roughan & O'Donovan Consulting Engineers (ROD) has been commissioned by Dún Laoghaire – Rathdown County Council (DLRCC) to prepare Flood Alleviation Options (FAO) for the Stradbrook and Sallynoggin Streams.	Runs through subject site
ABP-314041-22	Lands located at and adjoining Stradbrook House, Stradbrook Road, Mountashton, Blackrock, Co. Dublin.	Planning Application lodged 11th July 2022	Demolition of the existing Stradbrook House and adjoining surface car park, and the construction of 108 No. Build-to-Rent residential senior living apartments	0.5 km
ABP31207021	The former Ted Castles site and Dun Leary House (a Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary	Planning Application Lodged 26th November 2021.	'Build to Rent' strategic housing development consisting of the construction of a new development of 146 no. units	1.4 km
D21A/1041	St. Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, County Dublin, A96 TN26	3rd Party Appeal lodged against decision to grant on 8/8/22.	Mixed use development of 88 no. Build to Rent residential apartments, commercial unit and café across 2 buildings.	1.4km
N/A	Deansgrange Stream	Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts	Improvements to the flood defence regime	1.6km at closest point
D21A/0996 + ABP-314429-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	3rd Party Appeal lodged against decision to grant on 22/08/22.	The proposal relates to a Phase 3 residential development of 98 no. apartments and all associated site works.	c.1.85 km

Table 11.10 List of Planned Developments surrounding the Proposed Project

However, a high level of dust control will be implemented across the site of the proposed development, which will avoid significant dust emissions. The Construction Management Plan

and other planning documents associated with the planned development (D22A/0070 + 313363-22) at the adjoining site to the proposed development outline a mitigation plan to ensure for the control of construction dust. Provided these mitigation measures and those for the proposed development are in place for the duration of the 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, direct, localised, negative and imperceptible.

Due to the short-term duration of the construction phase and the low potential for significant GHG emissions, cumulative impacts to climate are considered neutral.

No significant cumulative impacts to air quality or climate predicted for the construction phase of the proposed development.

11.10.2 Operational Phase

The traffic data reviewed for the operational stage impacts to air quality (see Table 11.2) included the cumulative traffic associated with other existing and permitted developments in the local area where such information was available. The traffic model used is not a static model and is intended to predict and assess future growth. Therefore, the cumulative impact is included within the operational stage impact for the proposed development, as assessed above (Section 11.4.2.1). The impact is predicted to be long-term, direct, negative and imperceptible with regards to air quality and climate.

11.11 'Do-Nothing' Effect

The Do-Nothing scenario includes retention of the current site without the proposed development in place. In this scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc.). As per Section 11.3, the general air quality in the area is of a good level and is within the air quality guidelines for the protection of human health. With the implementation of the numerous climate measures set out under various government plans, including the Climate Action Plan 2021, emissions of pollutants from road traffic, including NO_2, PM_{10}, $PM_{2.5}$ and CO_2 will likely decrease in future years with the addition of further electric vehicles to the fleet and the phasing out of fossil fuelled vehicles.

The Do Nothing scenario for the operational phase is assessed within Section 11.4.3. Baseline traffic without the proposed development in place in future years was assessed in relation to NO_2 and CO_2 emissions. The modelling assessment determined there is an imperceptible impact to both air quality and climate.

11.12 Difficulties Encountered in Compiling the Chapter

There were no difficulties encountered when compiling this chapter.

11.13 Conclusion

Impacts to air quality and climate can occur during both the construction and operational phases of the proposed development. With regard to the construction stage the greatest potential for air quality impacts is from fugitive dust emissions impacting nearby sensitive receptors. Impacts to climate can occur as a result of vehicle and machinery emissions. In terms of the operational stage air quality and climate impacts will predominantly occur as a result of the change in traffic flows in the local areas associated with the proposed development.

There are a number of sensitive receptors in close proximity to the site at which dust impacts may occur. Provided the dust mitigation measures outlined in Section 11.5 and Appendix 11.2 are implemented, dust emissions are predicted to be short-term, negative and imperceptible and will not cause a nuisance at nearby sensitive receptors.

The operational phase air quality modelling assessment determined that there is no potential for significant impacts as a result of traffic related to the proposed development. It can therefore be determined that the impact to air quality as a result of altered traffic volumes during the operational phase of the proposed development is negative, imperceptible and long-term.

The changes in traffic volumes associated with the operational phase of the development were not substantial enough the meet the assessment criteria requiring a detailed climate modelling assessment. The proposed development is not predicted to significantly impact climate during the operational stage and will not contribute significantly to Ireland's obligations under the EU Targets and emissions ceilings.

No significant impacts to either air quality or climate are predicted during the construction or operational phases of the proposed development.

11.14 References

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Institute of Air Quality Management (IAQM) (2014) Guidance on the Assessment of Dust from Demolition and Construction Version 1.1
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UK DEFRA (2016) Part IV of the Environment Act 1995: Local Air Quality Management, LAQM. PG(16)
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UK Highways Agency (2019b) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate
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)

Appendix 11.1
AMBIENT AIR QUALITY STANDARDS

National standards for ambient air pollutants in Ireland have generally ensued from Council Directives enacted in the EU (& previously the EC & EEC). The initial interest in ambient air pollution legislation in the EU dates from the early 1980s and was in response to the most serious pollutant problems at that time which was the issue of acid rain. As a result of this sulphur dioxide, and later nitrogen dioxide, were both the focus of EU legislation. Linked to the acid rain problem was urban smog associated with fuel burning for space heating purposes. Also apparent at this time were the problems caused by leaded petrol and EU legislation was introduced to deal with this problem in the early 1980s.

In recent years the EU has focused on defining a basis strategy across the EU in relation to ambient air quality. In 1996, a Framework Directive, Council Directive 96/62/EC, on ambient air quality assessment and management was enacted. The aims of the Directive are fourfold. Firstly, the Directive's aim is to establish objectives for ambient air quality designed to avoid harmful effects to health. Secondly, the Directive aims to assess ambient air quality on the basis of common methods and criteria throughout the EU. Additionally, it is aimed to make information on air quality available to the public via alert thresholds and fourthly, it aims to maintain air quality where it is good and improve it in other cases.

As part of these measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, Council Directive 1999/30/EC, has been passed into Irish Law as S.I. No 271 of 2002 (Air Quality Standards Regulations 2002), and has set limit values which came into operation on 17th June 2002. The Air Quality Standards Regulations 2002 detail margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance varies from 60% for lead, to 30% for 24-hour limit value for PM_{10}, 40% for the hourly and annual limit value for NO_2 and 26% for hourly SO_2 limit values. The margin of tolerance commenced from June 2002, and started to reduce from 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by the attainment date. A second daughter directive, EU Council Directive 2000/69/EC, has published limit values for both carbon monoxide and benzene in ambient air. This has also been passed into Irish Law under the Air Quality Standards Regulations 2002.

The most recent EU Council Directive on ambient air quality was published on the 11/06/08 which has been transposed into Irish Law as S.I. 180 of 2011. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive and its subsequent daughter directives. Provisions were also made for the inclusion of new ambient limit values relating to $PM_{2.5}$. The margins of tolerance specific to each pollutant were also slightly adjusted from previous directives. In regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. In addition, new ambient standards for $PM_{2.5}$ are included in Directive 2008/50/EC. The approach for $PM_{2.5}$ was to establish a target value of 25 µg/m^3, as an annual average (to be attained everywhere by 2010) and a limit value of 25 µg/m^3, as an annual average (to be attained everywhere by 2015), coupled with a target to reduce human exposure generally to $PM_{2.5}$ between 2010 and 2020. This exposure reduction target will range

from 0% (for $PM_{2.5}$ concentrations of less than 8.5 µg/m^3 to 20% of the average exposure indicator (AEI) for concentrations of between 18 - 22 µg/m^3). Where the AEI is currently greater than 22 µg/m^3 all appropriate measures should be employed to reduce this level to 18 µg/m^3 by 2020. The AEI is based on measurements taken in urban background locations averaged over a three year period from 2008 - 2010 and again from 2018-2020. Additionally, an exposure concentration obligation of 20 µg/m^3 was set to be complied with by 2015 again based on the AEI.

Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions. The Alert Threshold is defined in Council Directive 96/62/EC as "a level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken as laid down in Directive 96/62/EC". These steps include undertaking to ensure that the necessary steps are taken to inform the public (e.g. by means of radio, television and the press).

The Margin of Tolerance is defined in Council Directive 96/62/EC as a concentration which is higher than the limit value when legislation comes into force. It decreases to meet the limit value by the attainment date. The Upper Assessment Threshold is defined in Council Directive 96/62/EC as a concentration above which high quality measurement is mandatory. Data from measurement may be supplemented by information from other sources, including air quality modelling.

An annual average limit for both NO_X (NO and NO_2) is applicable for the protection of vegetation in highly rural areas away from major sources of NO_X such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. Annex VI of EU Directive 1999/30/EC identifies that monitoring to demonstrate compliance with the NO_X limit for the protection of vegetation should be carried out distances greater than:

- 5 km from the nearest motorway or dual carriageway
- 5 km from the nearest major industrial installation
- 20 km from a major urban conurbation

As a guideline, a monitoring station should be indicative of approximately 1000 km^2 of surrounding area.

Under the terms of EU Framework Directive on Ambient Air Quality (96/62/EC), geographical areas within member states have been classified in terms of zones. The zones have been defined in order to meet the criteria for air quality monitoring, assessment and management as described in the Framework Directive and Daughter Directives. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 23 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The Zones were defined based on among other things, population and existing ambient air quality.

EU Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (S.I. No. 33 of 1999). The act has designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in the State. Other commonly referenced ambient air quality standards include the World Health Organisation. The WHO guidelines differ from air quality standards in that they are primarily set to protect public health from the effects of air

pollution. Air quality standards, however, are air quality guidelines recommended by governments, for which additional factors, such as socio-economic factors, may be considered.

Appendix 11.2
Dust Management Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing 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).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 11.2 for the windrose for Dublin Airport). As the prevailing wind is predominantly westerly to south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2014; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods were care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- 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;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- 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;

- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

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 20 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 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

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. 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.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control.

12.0 NOISE AND VIBRATION

12.1 Introduction

This chapter of the Environmental Impact Assessment Report has been prepared by AWN Consulting Limited (AWN) to assess the potential noise and vibration impact of the proposed mixed use development located on lands at Dalguise House, Monkstown, Co. Dublin. A full description of the development is available in Chapter 5 – Description of the Proposed Project.

This chapter was completed by Leo Williams BAI MAI PgDip MIOA, Senior Acoustic Consultant at AWN Consulting who has over 6 years' experience as an environmental consultant specialising in Acoustics and Environmental Impact Assessment. He graduated from TCD with a BA, BAI (Mechanical and Manufacturing Engineering) and an MAI (Mechanical and Manufacturing Engineering). Leo is a Member of the Institute of Acoustics and has extensive experience in environmental noise impact assessment, in particular residential developments, industrial/manufacturing and renewable energy noise sources. He has experience in room and building acoustics modelling and assessment. He ahs completed the IOA Diploma in Acoustics and Noise Control and is a registered sound insulation tester under the Sound Insulation Testing Register, Ireland (SITRI).

12.2 Methodology

The assessment has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out in the following sections. In addition to specific noise and vibration guidance documents, the following Environmental Protection Agency (EPA) guidelines were considered and consulted in the preparation of this Chapter:

- Draft Advice Notes for Preparing Environmental Impact Statements (EPA 2015); and
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) (EPA 2022).

There are no statutory standards in Ireland relating to noise and vibration limit values for construction works or for environmental noise relating to the Operational Phase. In the absence of specific statutory Irish guidelines, the assessment has made reference to non-statutory national guidelines, where available, in addition to international standards and guidelines relating to noise and / or vibration impact for environmental sources. These are summarised below:

- British Standard Institute (BSI) British Standard (BS) 5228-1:2009 +A1 2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise (hereafter referred to as BS 5228–1) (BSI 2014a);
- BS 5228-2:2009+A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration (hereafter referred to as BS 5228 – 2) (BSI 2014b);

- BS 7385: 1993 Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (hereafter referred to as BS 7385–2). (BSI 1993);
- BS 6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration sources other than blasting (hereafter referred to as BS 6472–1) (BSI 2008);
- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings (hereafter referred to as BS 8233–2) (BSI 2014c);
- BS 4142: 2014 +A1 2019 Methods for Rating and Assessing Industrial and Commercial Sound (hereafter referred to as BS 4142) (BSI 2019);
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) LA 111 Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2 (hereafter referred to as DMRB Noise and Vibration) (UKHA 2020);
- Dublin Local Authorities including Dublin City Council (DCC), Fingal County Council (FCC), South Dublin County Council (SDCC) and Dún Laoghaire Rathdown County Council (DLRCC) Dublin Agglomeration Third Environmental Noise Action Plan December 2018 – July 2023 (hereafter referred to as the Dublin Agglomeration NAP 2018 – 2023) (DCC; FCC; SDCC; DLRCC 2018);
- Dublin City Council (DCC) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition
- S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations 2018 (hereafter referred to as the Noise Regulations);
- S.I. No. 241/2006 - European Communities Noise Emission by Equipment for Use Outdoors (Amendment) Regulations 2006;
- International Organization for Standardization (ISO) 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors - Part 2: General method of calculation (hereafter referred to as ISO 9613 – 2) (ISO 1996);
- ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures (hereafter referred to as ISO 1996 – 1) (ISO 2016);
- ISO 1996-2:2017 - Description, measurement and assessment of environmental noise - Part 2: Determination of sound pressure levels (hereafter referred to as ISO 1996 – 2) (ISO 2017), and;
- The UK Department of Transport Calculation of Road Traffic Noise (hereafter referred to as the CRTN) (UK Department of Transport 1998).

The study has been undertaken using the following methodology:

- Environmental noise surveys have been conducted in the vicinity of the proposed development to assess the existing baseline noise environment;
- A review of published noise data from the EPA for road traffic noise has been undertaken to provide additional information relating to the baseline noise levels in the surrounding area;
- 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, and;
- 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.

The assessment is undertaken in consideration of Management Processes set out in the Dun Laoghaire-Rathdown County Development Plan 2022 – 2028. Section 12.9.2,

- To require developers to produce a Sound Impact Assessment and Mitigation Plan where a noise-generating use is proposed and specialist input is deemed necessary, for any new development that the Planning Authority considers will impact negatively on pre-existing environmental sound levels.
- To require developers to produce an Acoustic Design Assessment (informed by guidance such as is set out in 'ProPG Planning and Noise', 2018, as referenced in the 'Dublin Agglomeration Noise Action Plan 2018 – 2023'), where a noise-sensitive use is proposed in an area that may have high pre-existing environmental sound levels.

With reference to the first, Section 12.5.2 of this EIAR assesses noise-generating uses associated with the operation of the proposed development, namely mechanical services plant and traffic.

With reference to the second process, noise levels measured during the baseline noise survey, described in Section 12.3 of this EIAR, do not constitute a high-noise level environment, in line with the definitions set out in the aforementioned ProPG document.

12.3 Baseline Environment

An environmental noise survey has been conducted at the proposed development site in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996-1 (ISO 2017).

12.3.1 Baseline Noise Survey Locations

The measurement location was selected to represent the noise environment at noise-sensitive locations (NSL) surrounding the proposed development. The selected location is shown in Figure 12.7. The measurement location is representative of the lower noise levels at the development site and also the nearest noise sensitive locations offsite, at Richmond Park.

Figure 12.7 Survey Location

12.3.2 Survey Periods

Unattended noise measurements at UN01 were conducted between 11:45hrs on 22 August and 11:00 on 24 August 2022.

12.3.3 Personnel and Instrumentation

AWN installed and collected the noise monitoring equipment. The following instrumentation was used in conducting the noise surveys:

Equipment	Type	Serial Number	Calibration Date

Sound Level Meter	RION NL-52	186668	7 May 2022

12.3.4 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_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix 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 x 10^{-5} Pa.

12.3.5 Noise Survey Results

Location UN01

The measured noise levels are summarised as follows.

Date	Average Daytime Level	Background Daytime Level	Average Night-time Level	Background Night-time Level
	$L_{Aeq,16hr}$	$L_{A90,16hr}$	$L_{Aeq,8hr}$	$L_{A90,8hr}$
22/08/2022	46	38	36	30
23/08/2022	45	40	38	35
24/08/2022	42	41	-	-
Average	**45**	**40**	**37**	**33**

Table 12.43: Summary of unattended noise measurements at UN01.

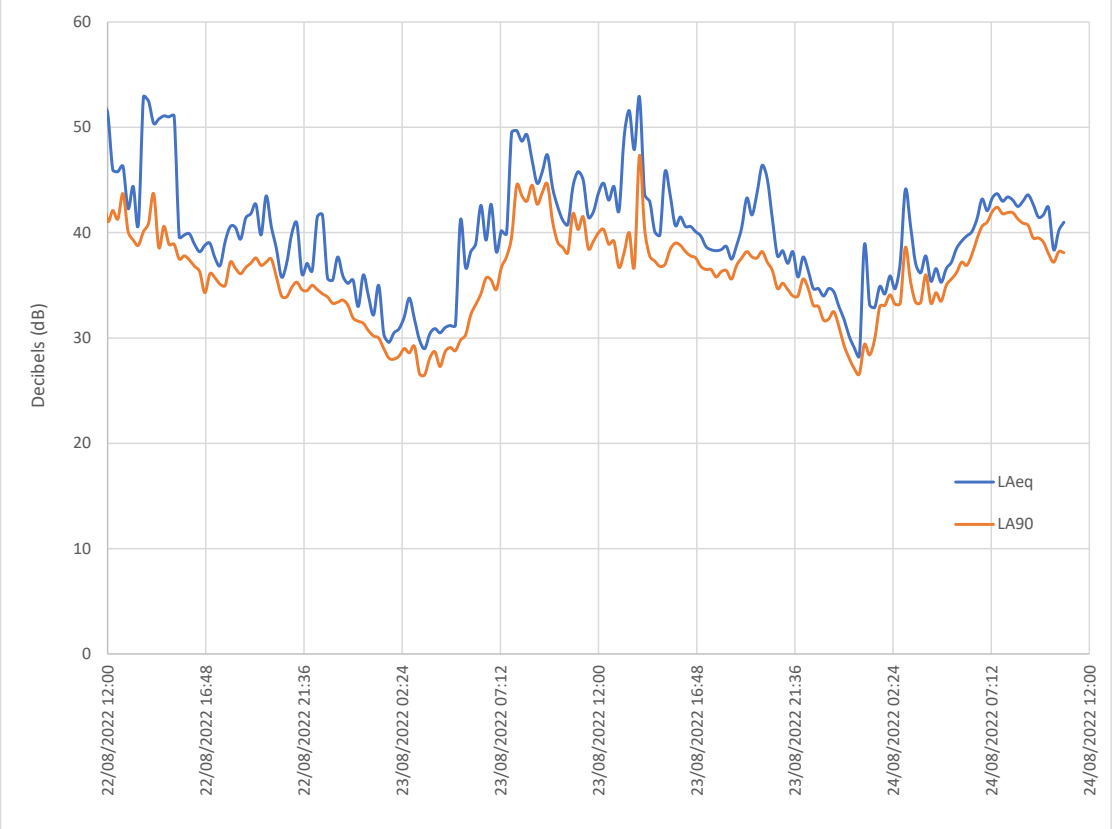

Figure 12.8 Time history plot of LAeq and LA90 at UN01.

As shown in Figure 12.8, the daytime noise level at UN01 was quite varied, ranging from 35 to 45 dB L_{Aeq}. There was a steady decrease during the evening periods and into the night periods. Average night-time noise levels were 36 and 38 dB $L_{Aeq,8hr}$ on 23rd and 24th, respectively.

12.4 Assessment Criteria

12.4.1 Construction Phase – 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. Construction noise sources include construction plant and machinery and construction related traffic on surrounding roads.

The British Standard BS 5228–1 (BSI 2014a) is referenced here for the purposes of setting appropriate construction noise limits for the development. This is the most widely accepted standard for this purpose in Ireland. This document sets out a method whereby construction noise thresholds are determined based on ambient noise level. This method is summarised in Table 12.44.

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

Table 12.44: Threshold of Potential Significant Effect at Dwellings.

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.

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 Construction Noise Thresholds, Table 12.45 includes guidance as to the likely magnitude of effect associated with construction activities, relative to the CNT. This guidance is derived from Table 3.16 of *DMRB: Noise and Vibration* and adapted to include the relevant significance effects from the *EPA Guidelines* (EPA 2022).

Guidelines for Noise Impact Assessment Significance (DMRB)	CNT per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 to +15 dB	Significant, to Very Significant	

Table 12.45: Construction Noise Significance Ratings

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely effects during the construction stages.

Construction Traffic

Vehicular movement to and from the construction site for 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 DMRB Noise and Vibration (UKHA 2020) and the EPA Guidelines (EPA, 2017). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB Noise and Vibration (UKHA 2020) document.

Table 12.46 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 (Short-term)	EPA Significance of Effect
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant
3 – 4.9	Perceptible	Moderate	Slight, Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

Table 12.46: Classification of magnitude of traffic noise changes in the short-term

12.4.2 Construction Phase – 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. 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.

There is no published statutory Irish guidance relating to the maximum permissible vibration level. The following standards are the most widely accepted in this context and are referenced here in relation to cosmetic or structural damage to buildings:

- British Standard BS 5228-2 (BSI 2014b); and
- British Standard BS 7385-2 (BSI 1993)

BS 5228-2 and BS 7385-2 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 12.47 below.

Type of building	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Unreinforced or light framed structures. **Residential or light commercial buildings.**	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

Table 12.47: Transient vibration guide values for cosmetic damage.

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 7385-2 state that minor structural damage can occur at vibration magnitudes greater than twice those in Table 12.47 and major structural damage can occur at vibration magnitudes greater than four times those in Table 12.47.

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 12.48.

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.

Table 12.48: Guidance on human response to vibration levels.

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.

12.4.3 Operational Phase – Noise

Mechanical Services Plant

In the case that mechanical plant is proposed for heating and cooling of residential units or for serving food & beverage/retail facilities on site, there is the potential for additional plant noise to be introduced to the environment. To assess this, reference is made here to the British Standard BS 4142 (BSI 2019). 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 compliant investigations.

The method for assessing plant noise set out in BS 4142 (BSI 2019) 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;
"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 (as referred to in BS 4142 (BSI 2019)), depending on the context.

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 DMRB Noise and Vibration (UKHA 2020) and the EPA Guidelines (EPA, 2017). Table 12.49 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 12.49: Classification of magnitude of noise impacts in the long term.

Noise from Creche

For other non-traffic related sources, e.g. the creche, appropriate guidance on internal noise levels for dwellings is contained within BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. This British Standard sets out recommended noise limits for indoor ambient noise levels in dwellings as summarised in Table 12.50.

Typical Scenario	Design Range, $L_{Aeq,T}$ dB	
	Daytime $L_{Aeq,16hr}$ (07:00 to 23:00hrs)	**Daytime $L_{Aeq,16hr}$ (07:00 to 23:00hrs)**
Living / Dining Rooms	35 / 40	n/a
Bedrooms	35	30

Table 12.50: Recommended Indoor Ambient Noise Levels

In relation to assessment of noise levels associated with the creche, it is appropriate to derive external limits based on the internal criteria. This is done by factoring in the degree of noise reduction afforded by a partially open window and typical 15dB attenuation is noted in this British Standard. Using this correction value across an open window, the following external noise levels would achieve the internal noise levels noted in Table 12.50 above. The creche will not operate during the night-time, i.e. 23:00 to 07:00 hours.

- Daytime / Evening (07:00 to 23:00 hours) 50 – 55 dB $L_{Aeq,1hr}$

Noise emissions from Creche activity will be controlled to ensure that the resultant noise level outside the façade of any nearby dwelling offsite, will not exceed the noise level above.

12.4.4 Operational Phase – Vibration

The development is residential and mixed use in nature. There are no vibration sources associated with the proposed development, therefore there are no outward impacts associated with vibration for the operational phase, and accordingly such impacts have been scoped out.

12.5 Potential Impacts of the Proposed Project

12.5.1 Construction Phase

Noise

The highest potential noise and vibration impact of the proposed development will occur during the construction phase due to the operation of various plant machinery used to construct the various phases in addition to Heavy Goods Vehicles (HGVs) movement to, from and around the site. However, impacts during this phase are short-term in duration.

BS 5228-1 (BSI 2014a) contains noise level data for various construction machinery. The noise levels relating to site clearance, ground excavation, piling, and loading lorries (dozers, tracked excavators and wheeled loaders) are typically in the range of 76 to 82 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. A combined construction noise level of 86 dB at 10 m also allows for 5 items of plant with an operational noise level of 78 dB each operating simultaneously along the closest works boundary, which is associated with typical construction mobile plant items, cranes etc., all of which will occur on the site.

Guidance on the approximate attenuation achieved by barriers surrounding the site is also provided in BS 5228-1 (BSI 2014a). 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.
It is assumed that a standard site perimeter hoarding of 2.4m height will be installed around the site boundary.

The former scenario will be assumed in this case as the nearest noise-sensitive locations first floor partially overlook the site. Table 12.51 shows the potential noise levels calculated at various distances based on the assumed sound power level and attenuation provided by the barrier of 5 dB.

The nearest NSLs to the site are the residential properties set back from each of the site boundaries, for example at Richmond Park to the east, Brook Court to the south and The Orchard to the west. To the north are properties fronting on to Monkstown Road.

Figure 12.9: Noise Sensitive Locations

Thresholds for significant noise from construction can be determined by referring to Table 12.44 and the baseline ambient noise levels, as outlined in the assessment criteria section.

Description of Noise Source	Sound Power Level (dB $L_w(A)$)	Calculated noise levels at varying distances (dB $L_{Aeq,T}$)					
		15	20	30	40	60	80
3 no. items each with SPL of 81 dB at 10 m or 5 items each with SPL of 78 dB at 10m operating simultaneously.	114	77	75	71	69	65	63

Table 12.51: Potential construction noise levels at varying distances assuming attenuation of 10 dB from site barrier

The calculated noise levels in Table 12.51 indicate that the construction phase activities will likely be above the construction noise significant thresholds at the closest NSLs. The more intense and longer duration construction activity will occur at the locations of the apartment blocks which are typically location some 30 – 35m from the nearest NSLs offsite. The predicted noise level at this distance is 70 – 71 dB L_{Aeq}. With reference to Table 12.45 the associated effect at these nearest NLS is negative, moderate to significant and short-term.

While works are taking place close to the site boundary at distances of 15-30m from NSLs, the predicted noise level is higher, in the range 71 – 77 dB L_{Aeq}. These works will typically comprise site clearance and landscaping and will be of much shorter duration. With reference to Table 12.45 the associated effect at these nearest NLS is negative, significant to very significant and temporary.

At sensitive locations at distances of 60m and greater from construction works, the predicted construction noise level is within the noise criteria and therefore the predicted effect is negative, moderate and short term.

Construction Phase Traffic

All construction related vehicles accessing and egressing the site will do so from the specified access road off Monkstown Road.

In respect of potential noise impact, traffic volumes would need to increase by 25% or greater along the designated network to result in a negligible (1 dB) increase in traffic noise level. With reference to the baseline traffic flows on Monkstown Road set out in Chapter 17 (Material Assets – Roads and Traffic), and the maximum expected daily construction traffic flow (some 120 vehicle movements per day) the worst case forecast construction traffic falls significantly short of a 25% increase. Therefore, no significant increase in traffic noise levels is predicted to occur.

Vibration

It is anticipated that excavations will be made using standard excavation machinery, which typically do not generate appreciable levels of vibration close to the source. Taking this into account and considering the distance that offsite NSLs are from the works and the attenuation of vibration levels over distance, the resultant vibration levels are expected to be well below a level that would cause disturbance to building occupants or even be perceptible.

For the purposes of this assessment, the expected vibration levels during piling assuming augured or bored piles have been determined through reference to published empirical data. The British Standard BS 5228 – Part 2: Vibration, publishes the measured magnitude of vibration of rotary bored piling using a 600mm pile diameter for bored piling into soft ground over rock, (Table D.6, Ref. No. 106):

- 0.54 mm/s at a distance of 5m, for auguring;
- 0.22 mm/s at a distance of 5m, for twisting in casing;

- 0.42 mm/s at a distance of 5m, for spinning off, and;
- 0.43 mm/s at a distance of 5m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would be likely to cause disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 12.47 to avoid any cosmetic damage to buildings. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in Table 12.48. The potential vibration impact during the construction phase is of neutral, imperceptible and short-term impact.

Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration threshold set out in Table 12.47 during all activities. Further discussion on mitigation measures during this phase are discussed in Section 12.6.1.

12.5.2 Operational Phase

Mechanical Plant Noise

It is expected that the principal items of building and mechanical services plant will be associated with ventilation and heating of the apartment blocks. These items will be selected at a later stage, however, they will be designed and located so that there is no negative impact on sensitive receivers in proximity to the proposed development. The services plant will be designed/attenuated to meet the relevant plant noise criteria for day and night-time periods at nearby sensitive receivers as set out in Section 12.4.3.

The effect associated with building services plant, once designed to achieve the relevant noise criteria, is categorised as negative, imperceptible and permanent.

Additional Traffic on Surrounding Roads

The proposed development has provision of some 224 no. resident parking spaces. Residents and visitors will journey to and from the development making use of local roads.

Figure 12.10 below illustrates the major road links in the vicinity of the proposed site. The traffic flows on these road links have been provided by ROD Consulting Engineers in the form of Annual Average Daily Traffic (AADT).

Figure 12.10: Road Link Diagram

The predicted changes in noise level on the local road network have been calculated based on the change in traffic flows that have been provided for the various scenarios considered, i.e. Do-Nothing and Do-Something. These are presented in the tables below. This assessment considers the impact of combined traffic flows associated with the proposed development as well as nearby permitted developments.

Road Link	Opening Year Traffic Flows – AADT		
	Do Nothing – 2024	Do Something – 2024 (With Development)	Predicted Change in Noise Level (dB)
Link A Monkstown Road	14,000	15,350	+0.4
Road Link	**Design Year Traffic Flows – AADT**		
	Do Nothing – 2039	**Do Something – 2039 (With Development)**	**Predicted Change in Noise Level (dB)**
Link A Monkstown Road	16,150	17,500	+0.3

Table 12.52: Predicted Change in Traffic Noise Levels

The calculated change in noise level along the Monkstown Road is +0.4 dB and +0.3 dB for Opening Year and Design Year respectively. With reference to Table 12.49 these increases are classed as not significant, with a subjective reaction of being barely perceptible.

Noise from Crèche

Measurement of noise levels generated by children playing outdoors at several crèches and kindergartens indicate typical noise levels in the order of 56 dB $L_{Aeq,1hr}$ at distance of 5 metres. The nearest noise sensitive receptors are located at Drayton Close, approximately 30m from the creche in Block A.

Considering the usage of the crèche area (e.g. external areas are only expected to be in use for a portion of the 16 hour daytime period) and the standard noise insulation of the façade, it is predicted that the internal criteria in Table 12.50 will be met in these closest sensitive rooms and also receptors further away, and therefore the resultant noise impact due to the creche is not significant.

12.6 Mitigation Measures

12.6.1 Construction Phase

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*. Whilst construction noise and vibration impacts are expected to vary during the construction phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site NSLs are minimised.

The best practice measures set out in BS 5228-1 and BS 5228-2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant;
- noise control at source;
- screening; and,
- liaison with the public.

Construction activities will vary depending on the phase of construction.

N_1 *Noise Control at Source*

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates will be reduced through stiffening

or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures will be implemented:

- The lifting of bulky items, dropping and loading of materials will be restricted to normal working hours.
- Mobile plant should be switched off when not in use and not left idling.
- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

N_2*Piling*

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven

can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

N_3 *Screening*

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. It is understood that the existing concrete perimeter wall will remain during the construction process and provide a degree of screening.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

N_4 *Liaison with the Public*

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

N_5 *Project Programme*

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ piling or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

N_6 *Monitoring*

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 will be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.*

Vibration monitoring stations will continually log vibration levels using the Peak Particle Velocity parameter (PPV, mm/s) in the X, Y and Z directions, in accordance with BS ISO 4866: 2010: *Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures.*

N_7 *General Good Practice*

General good practice measures include:

- The contractor will appoint a site representative responsible for matters relating to noise.
- A noise and vibration monitoring specialist will be appointed to periodically carry out independent monitoring of noise and vibration during random intervals and at sensitive locations for comparison with limits and background levels.
- All ancillary pneumatic percussive tools shall be fitted with mufflers or silences of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.

12.6.2 Operational Phase

Mechanical Plant Noise

Best practice guidance details an assessment methodology to derive appropriate noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the effect of plant noise is acceptable. To achieve these noise limits, consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques. Some example of these measures are as follows:

- **N_8** duct mounted attenuators on the atmosphere side of air moving plant;
- **N_9** splitter attenuators or acoustic louvres providing free ventilation to internal plant areas;
- **N_10** solid barriers screening any external plant;
- **N_11** anti-vibration mounts on reciprocating plant.

In addition to the above, it is proposed that the following practices are adopted to minimise potential noise disturbance for neighbours.

- **N_12** All mechanical plant items e.g. motors, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised;
- **N_13** 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.

12.7 Residual Impacts

12.7.1 Construction Phase

The construction noise assessment has shown that predicted noise levels associated with construction activity at the location of development buildings, i.e. distances of 30-35m from nearest NLS, are above the noise criteria and therefore for these works a negative, moderate to significant and short-term effect is predicted.

For the time periods whereby works are taking place close to the site boundary at distances of 15-30m from NSLs, the predicted effect at these nearest NLS is negative, significant to very significant and temporary.

At sensitive locations at distances of 60m and greater from construction works, the predicted construction noise level is within the noise criteria and therefore the predicted effect is negative, moderate and short term.

The noise assessment of construction vehicle movements associated with the site has shown that the predicted effect will be of negative, imperceptible and short-term effect on offsite noise sensitive locations considering existing traffic volumes on the local road network.

Due to the nature of the proposed construction works and the large distance between vibration-generating activity and residential sensitive locations, the effect at these locations is expected to be neutral, imperceptible and short-term.

12.7.2 Operational Phase

Mechanical Plant

Plant items will be located and selected so that cumulative plant noise emissions from the development achieve the appropriate noise criteria, the noise impact is predicted to be neutral, imperceptible and long-term.

Additional Traffic on Adjacent Roads

Based on the traffic flows associated with the operation of the proposed development the impacts are predicted to be neutral, imperceptible and long term.

Noise from Creche

Based on the noise levels associated with the operation of the creche the impacts are predicted to be negative, not significant and long term.

Vibration

There are no proposed sources of vibration associated with the operation of the proposed development. The associated effects can therefore be described as neutral, imperceptible, and long term.

12.8 Monitoring

12.8.1 Construction Phase

The contractor will be required to ensure construction activities operate within the noise and vibration limits set out within this assessment. The contractor will be required to undertake regular noise and vibration monitoring at locations representative of the closest sensitive locations to ensure the relevant criteria are not exceeded.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.*

Vibration monitoring should be conducted in accordance with BS 6472:2008 *Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting* (human disturbance) and BS ISO 4866:2010 *Mechanical vibration and shock. Vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures* (building damage).

12.8.2 Operational Phase

There are no noise or vibration sources identified that require monitoring during the operational phase of the proposed development.

12.9 Reinstatement

Not applicable to noise and vibration.

12.10 Interactions

In compiling this environmental impact assessment, reference has been made to the project description provided by the project co-ordinators in Chapter 5 (Description of Proposed Project), project drawings provided by the project architects and information relating to construction activities provided by the engineers. Noise emission sources from the proposed development during the construction and operational phases will be from construction plant and activity. The noise impact assessment has been prepared in consultation with the design team and traffic consultant, referring to the traffic flow projections set out in Chapter 17 (Traffic and Transportation).

The potential impacts on human beings in relation to the generation of noise and vibration during the construction phases are discussed in Chapter 7 (Population and Human Health).

In summary, high levels of noise and vibration could cause a degree of nuisance to people in nearby sensitive locations. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened.

Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is imperceptible to people in nearby noise sensitive locations.

12.11 Cumulative Impacts

12.11.1 Construction Phase

Table 12.54 outline the committed (permitted/ under construction) developments surrounding the proposed development.

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development	Distance to Dalguise House
D17A/0590+ABP-301533-18	Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	12th April 2018. Granted after appeal on 7th January 2019	Residential development consisting of the demolition of the existing nursing home and 5 no. studio apartments and the construction of a total of 56 no. residential units in 2 no. apartment blocks 76 car parking spaces, 5 motorcycle spaces and 41 bicycle spaces; 5 visitor car spaces and 26 bicycle spaces at surface level	Adjoining Dalguise House: < 50 metres
D19A/0378+ABP-305843-19	Former Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	05 Jun 2019. Granted after appeal on 26th May 2020	Permission for revisions to a residential development previously permitted under Reg. Ref. D17A/0590 / ABP-301533-18. 72 no. residential units in these 2 no. apartment blocks. 79 car parking spaces, 7 motorcycle spaces and 64 bicycle spaces	Adjoining Dalguise House: < 50 metres
ABP30380419	St. Teresa's House/Centre and St. Teresa's Lodge (Protected Structures), Temple Hill, Monkstown, Blackrock, Co. Dublin.	10th June 2019	294 no. apartments, conversion of St. Teresa's House, dismantling and relocation of St. Teresa's Lodge,	1.2 km
ABP31232521	3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin	14th April 2022	New residential and mixed use scheme of 493 residential units Including the subdivision, conversion and re-use of 'St. Teresa's House' the dismantling, relocation and change of use from residential to café of 'St. Teresa's Lodge' within the site development area.	1.2 km
ABP30887720	Former Europa Garage Site, Newtown Avenue, Blackrock, Co. Dublin	12th April 2021	Development of 101 no. apartments	1.3 km

D17A/0137	Newtown Avenue, Blackrock, Co. Dublin. This site is known as the 'Former Europa Garage site'	12th April 2017 (after appeal)	Demolition of the garage buildings on site. The residential scheme shall provide for 51 no. residential units	1.3 km
D21A/0958	Former Europa Garage Site, Newtown Avenue, Blackrock, Co Dublin	20th April 2022	Residential development providing 91 residential units	1.3 km
ABP-304682-19	Previously permitted Blocks 2 and 3, Cualanor, Glenageary, Upper Road, Co. Dublin.	30th August 2019	368 no. apartments and associated site works.	c.1.3km
ABP30894620	Lands adjacent and to the rear of Cluain Mhuire Family Centre, Newtownpark Avenue, Blackrock, Co. Dublin	15th April 2021	Demolition of a single storey shed, construction of 140 no. apartments	1.4 km
ABP-304249-19	Old School House, Eblana Avenue, Dun Laoghaire, Co. Dublin.	26th July 2019	Demolition of existing buildings on site, construction of 208 no. Build to Rent Shared Living Residential Development, cafe/kiosk and associated site works.	c.1.5km
ABP-308046-20	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	16th December 2020	Alterations to Phase 1 permission for 45 no. apartments from second to fourth floor permitted under Reg.Ref: D17A/0950 and ABP-300745-18 to include the provision of 57 no. additional apartments as an extension to Phase 1, the subject application relates to a total of 102 no. apartments.	c.1.85km
D21A/0706 + ABP -313240-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	Granted 15th March 2022. 3rd party appeal to ABP lodged 5th April 2022.	The proposal relates to a Phase 2A residential development of 41 no. apartments and the allocation of 60 no. car spaces.	c.1.85km
ABP30733220	Dean's Grange Road, Deansgrange, Co. Dublin	20th September 2020	Demolition of existing buildings, construction of 151 no. apartments	1.9 km
D18A/1184+ABP-305265-19	Junction of, Fleurville Road and, Newtownpark Avenue, and abutting, Annaville Avenue to the east, Blackrock, Co. Dublin	29th July 2019. Granted after appeal on 13th Feb 2020	Residential development consisting of 68 no. apartments	2 km

Table 12.53: List of Committed (Permitted/ Under Construction) Developments surrounding the Proposed Project

DLRCC/ ABP Reg. Ref.	Address	Lodgement Date/ Status	Overview of Development	Distance to Dalguise House
D22A/0070 + 313363-22	Richmond Cheshire Home, Richmond Park, Monkstown, Co. Dublin	Planning Application Lodged 31st January 2022. Refused by DLRCC and is now subject of a first party appeal to ABP.	Residential development comprising of 96 no. apartment units	Adjoining subject site: <50 metres
N/A	Stradbrook/Sallynoggin Streams	Tender documents for a CCTV and flow survey have been prepared which is envisaged to be completed during winter 2021-2022.	Roughan & O'Donovan Consulting Engineers (ROD) has been commissioned by Dún Laoghaire – Rathdown County Council (DLRCC) to prepare Flood Alleviation Options (FAO) for the Stradbrook and Sallynoggin Streams.	Runs through subject site
ABP-314041-22	Lands located at and adjoining Stradbrook House, Stradbrook Road, Mountashton, Blackrock, Co. Dublin.	Planning Application lodged 11th July 2022	Demolition of the existing Stradbrook House and adjoining surface car park, and the construction of 108 No. Build-to-Rent residential senior living apartments	0.5 km
ABP31207021	The former Ted Castles site and Dun Leary House (a Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary	Planning Application Lodged 26th November 2021.	'Build to Rent' strategic housing development consisting of the construction of a new development of 146 no. units	1.4 km
D21A/1041	St. Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, County Dublin, A96 TN26	3rd Party Appeal lodged against decision to grant on 8/8/22.	Mixed use development of 88 no. Build to Rent residential apartments, commercial unit and café across 2 buildings.	1.4km
N/A	Deansgrange Stream	Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts	Improvements to the flood defence regime	1.6km at closest point

D21A/0996 + ABP-314429-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	3rd Party Appeal lodged against decision to grant on 22/08/22.	The proposal relates to a Phase 3 residential development of 98 no. apartments and all associated site works.	c.1.85 km

Table 12.54: List of Planned Developments surrounding the Proposed Project

There is one development located close to the proposed development site some 50m distance at Richmond Green. Due to the proximity of this site to nearby sensitive receivers, there is potential for cumulative noise and vibration impacts should significant construction works be ongoing at both sites simultaneously.

Receivers at further distance would be less vulnerable to cumulative effects, since during the construction phase of the proposed development, construction noise on site will be localised and will therefore likely be the primary noise source at the nearest noise sensitive receivers. With reference to the lists above, the remaining proposed and committed developments are located at relatively large distances from the subject site, in the range 1.2 to 2km away.

Cumulative impacts will need to be considered and managed in the case that the construction phase of the proposed development occurs simultaneously to other permitted developments. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors will schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be negative, significant and short-term.

12.11.2 Operational Phase

Cumulative impacts associated with the operational phase of the development are expected to be limited to increases in traffic on local roads. The predicted increase in noise level associated with the subject development is predicted to be minimal, therefore when considered in a cumulative sense with another nearby development of similar size there is low probability of noise impacts in the form of changes in noise levels on surrounding roads.

Future projects or any currently unpermitted future developments of large scale will need to conduct an EIA to ensure that no significant impacts resulting from noise and vibration will occur as a result of those developments.

12.12 'Do-Nothing' Effect

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations will remain largely unchanged. The noise levels measured and noted in Section 12.3, are considered representative of the Do-Nothing scenario. The Do-Nothing scenario is therefore considered to have neutral impact.

12.13 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in the preparation of this chapter.

12.14 Conclusion

When considering a development of this nature, the potential noise and vibration effects on the surroundings must be considered for two stages: the short-term construction phase and the long term operational phase.

The assessment of construction noise and vibration and has been conducted in accordance best practice guidance contained in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration. Subject to good working practice as recommended in the EIAR Chapter, noise associated with the construction phase is not expected to exceed the recommended limit values for noise-sensitive locations beyond 35m from the site boundary and therefore no significant effects are expected. At distances less than 35m from the boundary, construction noise has the potential to exceed the recommended limit values depending on the construction activity occurring. A variety of standard proven best practice noise & vibration mitigation is proposed together with noise & vibration monitoring to ensure that limit values are adhered to.

This chapter demonstrates that the predicted noise levels associated with the operational phase of the proposed development will be within best practice noise limits recommended in Irish guidance, therefore it is not considered that a significant effect is associated with the development.

No significant vibration effects are associated with the operation of the site.

12.15 References

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);

BSI (1993). 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;

BSI (2014). BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise;

BSI (2014). BS 5228-2:2009+A:2014 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration;

EPA (2015). Advice Notes for Preparing Environmental Impact Statements. Draft. September 2015;

ISO (2016). ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;

UK Department of Transport (1998). Calculation of Road Traffic Noise;

- UKHA (2020). Design Manual for Roads and Bridges Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2;

13.0 LANDSCAPE AND VISUAL

13.1 Introduction

This Landscape/Townscape and Visual impact Assessment chapter has been prepared in respect of the proposed Dalguise House Large-Scale Residential Development ("the proposed development"), Monkstown, Blackrock, County Dublin. This chapter describes the townscape/visual context of the proposed development and assesses the likely impacts of the scheme on the receiving environment, in terms of both townscape character and visual amenity.

Landscape/townscape assessment relates to changes in the physical environment, brought about by a proposed development, which may alter its character. This requires a detailed analysis of the individual elements and characteristics of a landscape/townscape that go together to make up the overall character of that area. By understanding the aspects that contribute to this character it is possible to make judgements in relation to its quality (integrity) and to identify key sensitivities. This, in turn, provides a measure of the ability of the landscape/townscape in question to accommodate the type and scale of change associated with the proposed development, without causing unacceptable adverse changes to its character.

Visual Impact Assessment relates to changes in the composition of views as a result of changes to the landscape/townscape, how these are perceived and the effects on visual amenity. Such impacts are population-based, rather than resource-based, as in the case of landscape impacts.

13.1.1 Statement of Authority

This Landscape/Townscape and Visual Assessment chapter was prepared by Richard Barker, Principle Landscape Architect at Macro Works Ltd of Cherrywood Business Park, Loughlinstown, Dublin 18; a consultancy firm specialising in Landscape and Visual Assessment and associated maps, graphics and verified photomontages. Relevant experience includes a vast range of infrastructural, industrial and commercial projects since 1999, including numerous mixed-used development projects.

13.1.2 Description of the Proposed Development

Those aspects of the proposed development of most relevance to the Townscape and Visual Impact Assessment include;

The demolition and part-demolition of existing structures (total demolition area 967 sq m), including:

- White Lodge a 2 storey house (192 sq m);
- Swimming pool extension to the southeast of Dalguise House (250 sq m);
- Residential garage and shed to the southwest of Dalguise House (285 sq m);
- Lean-to structures to the south of the walled garden (142 sq m);

- Part-demolition of Lower Ground Floor at Dalguise House (9 sq m);
- Demolition of single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard;
- Demolition of potting shed (13 sq m);
- Removal of 2 no. glasshouses; and
- Alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east.

The development with a total gross floor area of approximately 46,940 sq m (including a basement of 5,230 sq m and undercroft parking 1,344 sq m; and 45,712 sq m of new build, excluding the retained existing buildings of 1,228 sq m), will consist 491 No. residential units, consisting of 484 No. new build and 7 No. residential units within existing structures (the latter repurposed from Dalguise House, Gate Lodge and Coach House).

The residential provision will comprise 3 No. two storey 3-bed terraced houses (GFA 569 sq m), and 488 No. Build-to-Rent units (consisting of 2 No. studio units; 288 No. 1-beds; 32 No. 2-beds/3 persons; 153 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The development will specifically consist of the construction of:

- Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units (15 No. 1-beds, 4 No. 2-beds) and a childcare facility (540 sq m over Ground and First Floor Levels);
- Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 6 No. 2-beds/3 persons, 9 No. 2-beds/4-persons);
- Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 6 No. 2-beds/3 persons, 9 No. 2-beds/4-persons);
- Block D (total GFA 4,150 sq m) 7 storey over basement level car park, comprising 50 No. apartment units (24 No. 1-beds, 26 No. 2-beds);
- Block E (total GFA 5,904 sq m) 9 storey over basement level car park, comprising 66 No. apartment units (40 No. 1-beds, 26 No. 2-beds), with residents' support facilities (75 sq m) and residents' amenities (gym, yoga studio, residents' lounge/co-working space; lobby 494 sq m) at Ground Floor Level, and residents' amenities (residents' lounge; games room; screen room; private lounge; kitchen 333 sq m) with roof terrace (106 sq m) at Eighth Floor Level;
- Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3 persons, 23 No. 2-beds/4-persons, 2 No. 3-beds);

- Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3 persons, 23 No. 2-beds/4-persons, 2 No. 3-beds);
- Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units (30 No. 1-beds, 5 No. 2-beds/3 persons, 17 No. 2-beds/4-persons, 2 No. 3-beds);
- Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 2 No. 2-beds/3 persons, 7 No. 2-beds/4-persons);
- Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 2 No. 2-beds/3 persons, 7 No. 2-beds/4-persons); and
- Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units (13 No. 1-beds and 7 No. 3-beds)); the refurbishment, adaptation and reuse of: two storey Dalguise Lodge (Entrance Lodge) (GFA 55 sq m) comprising residential support facilities;
- The refurbishment, adaptation and reuse of: a single storey Gate Lodge (GFA 55 sq m) comprising 1 No. 1-bed unit;
- The refurbishment, adaptation and reuse of a two storey Coach House and single storey Stableman's House (GFA 319 sq m) to provide 3 No. apartment units (1 No. 1-bed, 2 No. 2-bed/4 persons);
- The refurbishment, adaptation and change of use of Dalguise House (GFA 799 sq m) from a single residential dwelling to provide: 3 No. apartment units (2 No. studios and 1 No. 2-bed/3 person) at First Floor Level; a restaurant/cafe at Lower Ground Floor Level (GFA 273 sq m); and residents' amenities at Ground Floor Level (library, residents' lounge, events space, bar/bookable room, 157 sq m); works to the existing structures include: removal of existing internal partitions and doors, alterations to internal layout including provision of new partitions and doors to Dalguise Lodge (Entrance Lodge); the removal of the western chimney and chimney breast, removal of existing internal partitions and doors, and alterations to internal layout including provision of new partitions and doors to Gate Lodge (Brick Lodge); replacement of existing roof, windows and doors, non-original mezzanine floor and stairs of Coach House, creation of new internal and external opes, reconstruction of chimney, construction of new stairs, provision of new internal partitions and doors, replacement of the demolished single storey structure to south of Coach House with a 42 sq m single storey extension, including construction of a link between Coach House and Stableman's House; replacement of existing roofs, windows, doors, creation of new external opes and provision of new internal partitions and doors to Stableman's House; restoration of Coach House yard walls; removal of security bars from windows, internal partitions, doors, two secondary staircases, non-original fireplaces; and the reconfiguration of internal layout including introduction of new partitions, doors and fireplaces, in-fill of former secondary staircases; removal of an existing window at rear facade of Lower Ground Level, alterations to ope and replacement with a new external door; reinstatement of external wall fabric in place of demolished

lean-to at the rear facade; and removal of external door to swimming pool on eastern facade and closure of ope at Dalguise House);

- The development will also consist of: the construction of a garden pavilion; the provision of balconies and terraces, communal open space including roof gardens, public open spaces, hard and soft landscaping, landscaping works including the removal of trees, alterations to boundaries; the provision of: 224 No. car parking spaces (148 No. at basement level; 20 No. at undercroft; and 56 No. at surface level); motorbike spaces; level changes; ESB Substations (at Block D and Block H); plant areas; waste storage areas; provision of cycle parking (including cargo bike spaces) at basement and surface level; and all ancillary site development works above and below ground.

Vehicular and pedestrian access and egress is provided at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck. Alterations will be made at Purbeck including the relocation of 4 No. existing car parking spaces to facilitate the construction of a new vehicular and pedestrian bridge over the Stradbrook Stream.

13.1.2 Relevant Guidance

This Townscape and Visual Impact Assessment has been prepared in accordance with the following guidance documents;

- Environmental Protection Agency (EPA) - Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022)
- Institute of Environmental Management and Assessment (IEMA) and Landscape Institute (UK) – Landscape and Visual Impact Assessment Guidelines (2013)
- Landscape Institute - Townscape Character Assessment Technical Information Note 05/2017
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018 - Department of Housing, Planning and Local Government

13.2 Methodology

Production of this Landscape/Townscape and Visual Impact Assessment involved:

- A desktop study to establish an appropriate study area and relevant landscape and visual designations in the *Dún Laoghaire Rathdown County Development Plan 2022-2028*;
- Fieldwork undertaken in April 2022 to study the receiving environment;
- Assessment of the significance of the landscape impact of the proposed development as a function of landscape sensitivity weighed against the magnitude of the landscape impact;
- Assessment of the significance of the visual impact of the proposed development as a function of visual receptor sensitivity weighed against the magnitude of the visual

impact. The visual impact assessment utilises verifiable photomontages of the proposed development from a range of receptor locations within the surrounding public realm.

This document uses methodology as prescribed in the Institute of Environmental Management and Assessment (IEMA) and landscape Institute (UK) *'Guidelines for Landscape and Visual Impact Assessment'* (GLVIA-2013). It is also undertaken in accordance with the *Guidelines for Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022).

Although this is principally a 'townscape' assessment, it utilises the same outline methodology as would be employed for the more familiar Landscape and Visual Impact Assessment (LVIA) of developments in rural settings. The justification for this approach is provided below.

It is important to note that the Guidelines for Landscape and Visual Impact Assessment' (GLVIA-2013) follow the European Landscape Convention (ELC) definition of landscape: *'Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Council of Europe, 2000)*. Thus, GLVIA-2013 covers all landscapes from *"high mountains and wild countryside to urban and fringe farmland (rural landscapes), marine and coastal landscapes (seascapes) and the landscapes of villages towns and cities (townscapes)"* - whether protected or degraded.

In the case of this project, the study area is overwhelmingly that of an urban setting or 'townscape' and this is defined in GLVIA-2013 in the following manner (Section 2.7):

" 'Townscape' refers to areas where the built environment is dominant. Villages, towns and cities often make important contributions as elements in wider-open landscapes but townscape means the landscape within the built-up area, including the buildings, the relationships between them, the different types of urban spaces, including green spaces, and the relationship between buildings and open spaces. There are important relationships with historic dimensions of landscape and townscape, since evidence of the way the villages, towns and cities change and develop over time contributes to their current form and character."

13.2.1 Landscape/townscape Impact Assessment Criteria

When assessing the potential impacts on the townscape resulting from a proposed development, the following criteria are considered:

- Landscape/townscape character, value and sensitivity;
- Magnitude of likely impacts;
- Significance of landscape effects.

The sensitivity of the townscape to change is the degree to which a particular setting can accommodate changes or new elements without unacceptable detrimental effects to its

essential characteristics. Landscape/townscape Value and Sensitivity is classified using the following criteria set out in **Table 13-1**.

Table 13-1: Landscape/Townscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the townscape character exhibits a very low capacity for change in the form of development. Examples of which are high value townscapes, protected at an international or national level (e.g. World Heritage Site), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the townscape character exhibits a low capacity for change in the form of development. Examples of which are high value townscapes, protected at a national or regional level, where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the townscape character exhibits some capacity and scope for development. Examples of which are townscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the townscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated townscapes that may also have some elements or features of recognisable quality, where management objectives include, enhancement, repair and restoration.
Negligible	Areas of townscape character that include derelict sites and degradation where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of townscape improvements and/or restoration.

The magnitude of a predicted landscape/townscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed development. The magnitude takes into account whether there is a direct physical impact resulting from the

loss of landscape/townscape components and/or a change that extends beyond the immediate setting that may have an effect on the townscape character. **Table 13-2 below** refers.

Table 13-2: Magnitude of Landscape/Townscape Impacts

Sensitivity	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the townscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important townscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the townscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in landscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable.
Positive	Changes that restore a degraded landscape or reinforce characteristic landscape elements.

The significance of a landscape/townscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following matrix set out in **Table 13-3.**

Table 13-3: Impact Significance Matrix

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-substantial	Substantial	Moderate	Minor

High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Note: The significance matrix provides an indicative framework from which the significance of impact is derived. The significance judgement is ultimately determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix. Judgements indicated in orange are considered to be 'significant impacts' in EIA terms.

13.2.2 Visual Impact Assessment Criteria

As with the landscape/townscape impact, the visual impact of the proposed development will be assessed as a function of sensitivity versus magnitude. In this instance the sensitivity of the visual receptor, weighed against the magnitude of the visual effect.

Sensitivity of Visual Receptors

Unlike landscape sensitivity, the sensitivity of visual receptors has an anthropocentric (human) basis. It considers factors such as the perceived quality and values associated with the view, the landscape/townscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below to establish visual receptor sensitivity at each VRP:

Susceptibility of Receptors

In accordance with the Institute of Environmental Management and Assessment ("IEMA") Guidelines for Landscape and Visual Assessment (3rd edition 2013) visual receptors most susceptible to changes in views and visual amenity are:

"Residents at home;

People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views;

Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;

Communities where views contribute to the landscape setting enjoyed by residents in the area;

Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened".

Visual receptors that are less susceptible to changes in views and visual amenity include:

"People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape;

People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life".

Values Associated with the View

Recognised scenic value of the view

(County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Developments Plans, for example, a public consultation process is required;

Views from within highly sensitive townscape areas

These are likely to be in the form of Architectural Conservation Areas, which are incorporated within the Development Plan and therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the townscape around them;

Primary views from residential receptors

Even within a dynamic city context views from residential properties are an important consideration in respect of residential amenity;

Intensity of use, popularity

This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at a national or regional scale;

Viewer connection with the townscape

This considers whether or not receptors are likely to be highly attuned to views of the townscape i.e. commuters hurriedly driving on busy roads versus tourists focussed on the character and detail of the townscape;

Provision of vast, elevated panoramic views

This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;

Sense of remoteness and/or tranquillity
Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;

Degree of perceived naturalness
Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;

Presence of striking or noteworthy features

A view might be strongly valued because it contains a distinctive and memorable landscape / townscape feature such as a cathedral or castle;

Historical, cultural and / or spiritual significance

Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;

Rarity or uniqueness of the view.

This might include the noteworthy representativeness of a certain townscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;

Integrity of the townscape character

This looks at the condition and intactness of the townscape in view and whether the townscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;

Sense of place

This considers whether there is special sense of wholeness and harmony at the viewing location;

Sense of awe
This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be of higher sensitivity. No relative importance is inferred by the order of listing. Overall sensitivity

may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

13.2.3 Visual Impact Magnitude

The visual impact magnitude relates to the scale and nature of the visual change brought about by the proposal and this is reflected in the criteria contained in **Table 13.4** below.

Table 13.4: Magnitude of Visual Impacts

Criteria	Description
Very High	The proposal alters a large proportion or critical part of the available vista and is without question the most distinctive element. A high degree of visual clutter or disharmony is also generated, strongly reducing the visual amenity of the scene
High	The proposal alters a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual clutter or disharmony is also likely to be generated, appreciably reducing the visual amenity of the scene
Medium	The proposal represents a moderate alteration to the available vista, is a readily noticeable element and/or it may generate a degree of visual clutter or disharmony, thereby reducing the visual amenity of the scene.
Low	The proposal alters the available vista to a minor extent and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene.
Negligible	The proposal would be barely discernible within the available vista and/or it would not detract from, and may even enhance, the visual amenity of the scene.
Positive	Changes that enhance the available vista by reducing visual clutter or restoring degraded features.

13.2.4 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the same significance matrix and applies the same EPA definitions of significance as used earlier in respect of townscape impacts (see **Table 13-3** above).

13.2.5 Quality and Duration of Effects

In addition to assessing the significance of landscape/townscape effects and visual effects, EPA Guidance for EIAs requires that the quality of the effects is also determined. This could be negative/adverse, neutral, or positive/beneficial.

Whereas, the introduction of new built elements into countryside areas more often results in negative landscape and visual effects, in urban and/or peri-urban settings, development proposals are often replacing one built feature with another. The consequence for the townscape character and visual amenity is often beneficial, or may be a combination of positive effects and negative effects for different receptors. In the context of this assessment, the judgment of the quality of the effects is made in combination with the significance judgement for both landscape/townscape impacts and visual impacts (e.g. Moderate / Positive or Moderate / Negative).

Landscape and Visual effects are also categorised according to their duration:

- Temporary – Lasting for one year or less;
- Short Term – Lasting one to seven years;
- Medium Term – Lasting seven to fifteen years;
- Long Term – Lasting fifteen years to sixty years; and
- Permanent – Lasting over sixty years.

13.2.6 Extent of Study Area

Owing to the scale of the built-up development in this locality, it is anticipated that the proposed development is not likely to give rise to significant landscape/townscape or visual impacts beyond approximately 1km. As a result, a 1km-radius study area is used in this instance.

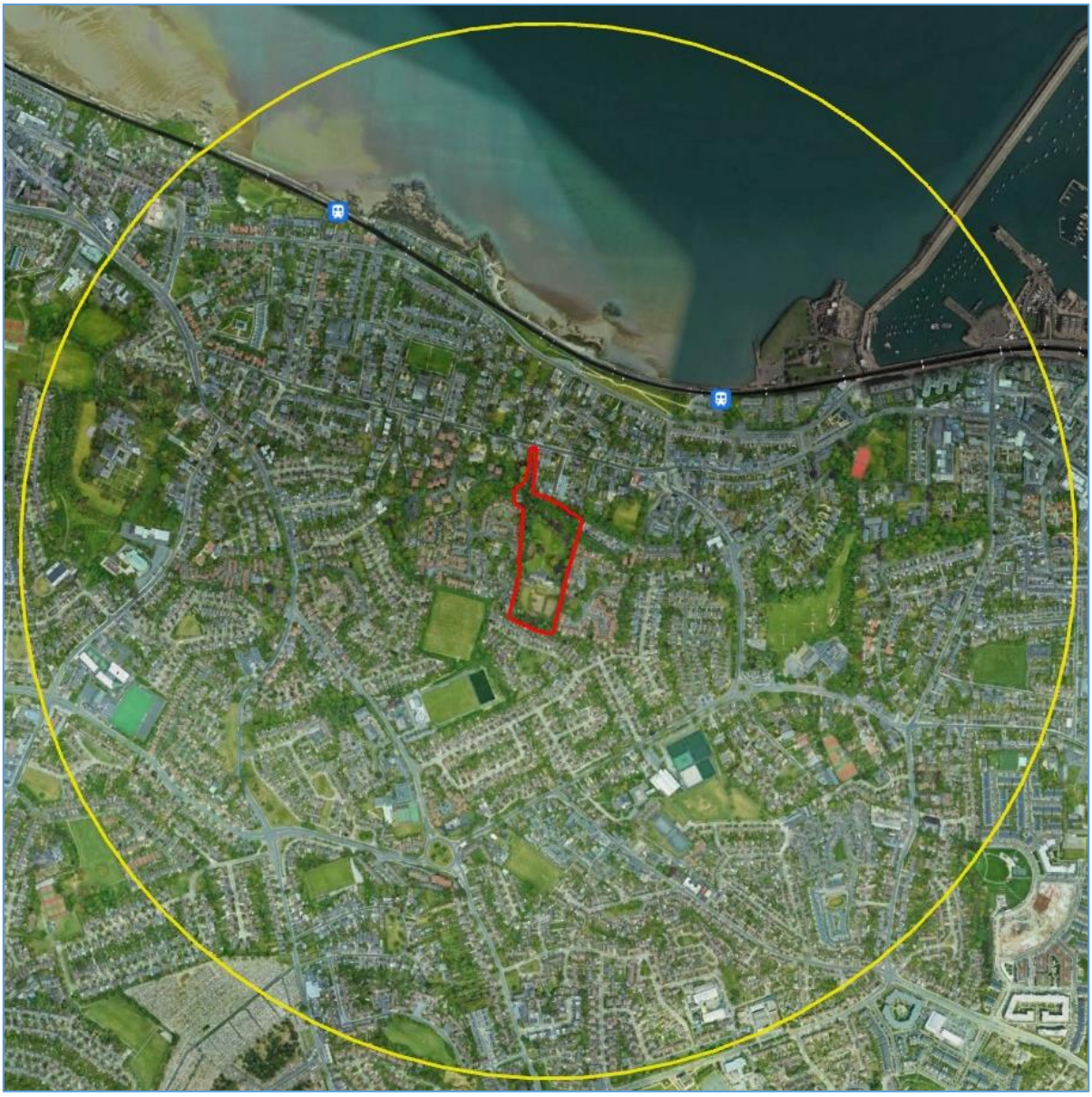

Figure 13.0 - Study area for the proposed development

13.3 Baseline Environment

The landscape/townscape baseline represents the existing context and is the scenario against which any changes to it, brought about by the proposed development, will be assessed. A description of the landscape/townscape context of the proposed site and wider study area is provided below in Section 13.3.1, Section 13.3.2. Although this description forms part of the landscape/townscape baseline, many of the elements identified also relate to visual receptors i.e. places from which viewers can potentially see the proposed development. The visual resource will be described in greater detail in Section 13.4.2

13.3.1 Immediate Site Context

The site itself is that of Dalguise House, which is approximately 9 acres in size with the protected structure of Dalguise House located south-centrally within it amongst extensive gardens, lawns and mature trees. There is a small stream that passes through the northern portion of the site. The site is in the heart of Monkstown Valley which slightly lower lying than the lands that surround it. Most notably there is a small rise to the north in the direction of Monkstown Road, which runs along a low crest before the topography falls gently towards the sea at Seapoint Beach. Monkstown Road and the streets that link down to the Seapoint Avenue coastal road (Seafield Avenue, Albany Avenue and Brighton Avenue) consist of a range of large Victorian Era residences interspersed with residential properties for more recent times generally contained within substantial mature gardens. To the east and west of the site are the meandering cul-de-sacs of the 'Richmond Park' and 'The Beeches' respectively. These mainly consist of mid-low density terraced and semi-detached dwellings surrounding small communal green areas. There are also some modest apartment buildings contained within The Beeches. To the south, a line of generous proportioned detached houses from Brook Crescent back onto the wooded southern boundary of the site. The grounds of Stradbrook Rugby Club occupy much of the nearby land to the southwest.

Figure 13.1 – Dalguise site looking south from above the coastline

Figure 13.2 – Dalguise site looking north towards the coastline

13.3.2 Broader Townscape Context

The wider study area throughout the southern quarters consists of residential housing estates that have emerged over the last century with the notable ruins of Monkstown Castle located on land to the southeast of the junction of Carrickbrennan Road Castle park and Monkstown Avenue. The village core of Monkstown is located approximately 200m to the northeast of the site around a recently refurbished square at the junction of Monkstown Road and Carrickbrennan Road and from there runs predominantly along Monkstown Road to the east. The village consists of an eclectic mix of retail uses and cafes occupying a row of cottages / mews buildings occupying the northern side of the road and attractive Victorian villa residences occupying the southern side. Further north the coast roads of Seapoint Avenue and Longford Terrace separate large period residences from the coastline. The intervening land is occupied by Seapoint linear park and Salthill / Monkstown DART station as well as the railway line that runs along the coast. The West Pier of Dún Laoghaire harbour occurs within the north eastern portion of the study area and is a popular recreational feature. Seapoint Beach, to the north of the site, is a popular bathing spot beneath one of the Martello towers that line the Dublin Bay Coastline.

13.3.3 Historic Context

Dalguise House appears on the Ordinance Survey maps from the period 1888 – 1913 in a location formerly occupied by Richmond Cottage which was contained in the wider estate of Carrick Brennan Lodge. Carrick Brennan Lodge is located to the west with Richmond Park to the east. Both neighbouring lodges survive today, but within a context of mid density residential development.

The village of Monkstown was formerly known as Carrickbrennan where a church had been built before the 8th century. Monkstown Castle was built in the 12th or 13th century and the land around Monkstown remained largely rural up until the 1800s, but containing large stately houses owned by merchants of Dublin. Monkstown Village began to be recognised as a commuter suburb and developed rapidly following the building of Dún Laoghaire Harbour and the connecting rail line along the coast in the early 1800's. The village is now centred around two churches; Monkstown Church and St Patrick's Church which are located at the junction of Monkstown Road and Carrickbrennan Road.

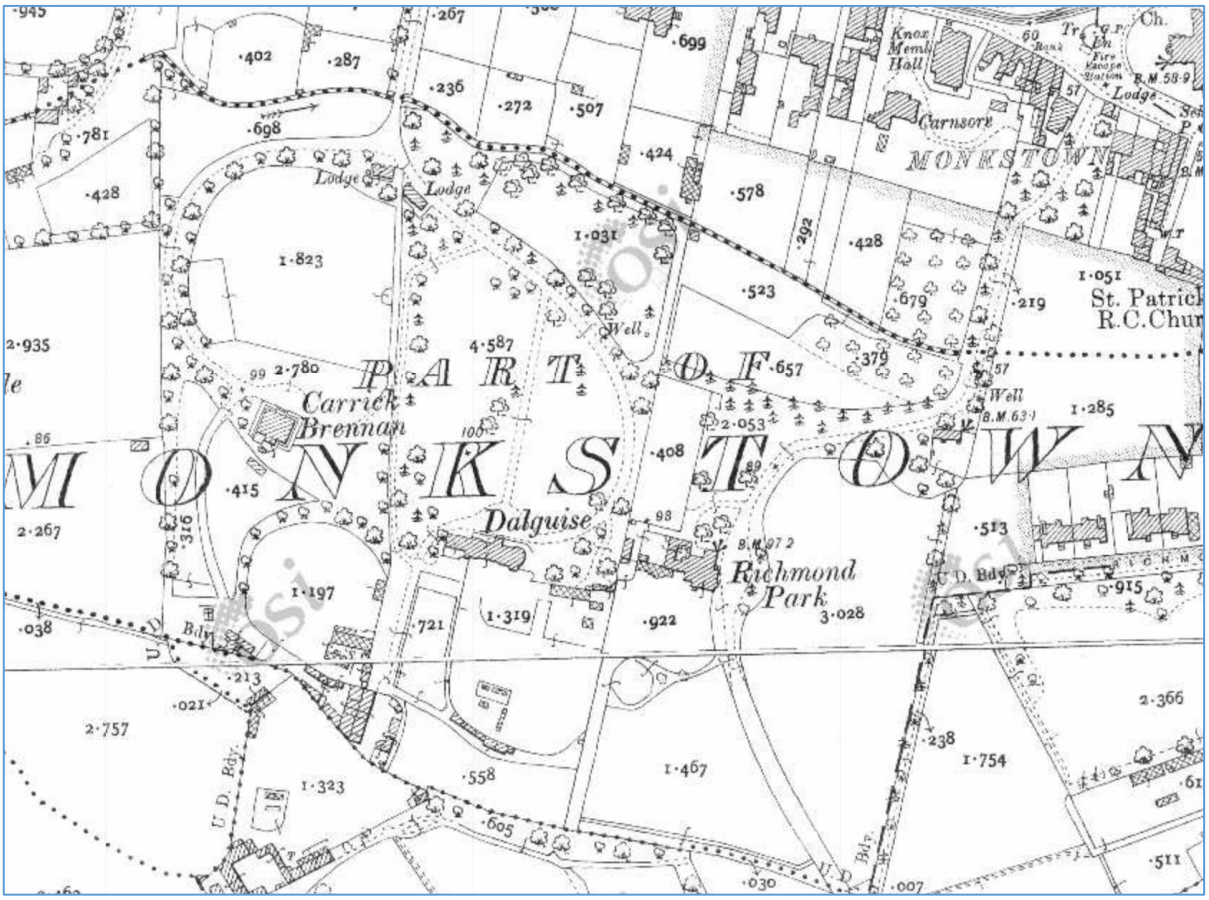

Figure 13.3 – Ordnance Survey Historic Map 25 inch (1888-1913)

13.3.4 Dún Laoghaire Rathdown Development Plan 2022 – 2028

According to the *Dún Laoghaire Rathdown Development Plan 2022-2028*:

- The site is zoned under Land Use Zoning objective 'A,' with an objective *'to protect and / or improve residential amenity'*.
- The lands within the northern (access leg only) portion of the site are contained within the Monkstown Architectural Conservation Area (ACA). This ACA contains all of the properties fronting Monkstown Road and further north to the shoreline, as well as the core of Monkstown village to the northeast.
- The site contains one Protected Structure being Dalguise House (RPS no. 870). Carrickbennan lodge and Richmond House to the east and west of the site are also shown to be protected structures.
- The site is subject of an objective to *'Protect and Preserve Trees and Woodlands'* but is not subject of a tree preservation order.
- There are protected views within the study area but these are elevated seaward views from Seapoint Road i.e. in the opposite direction to the site.

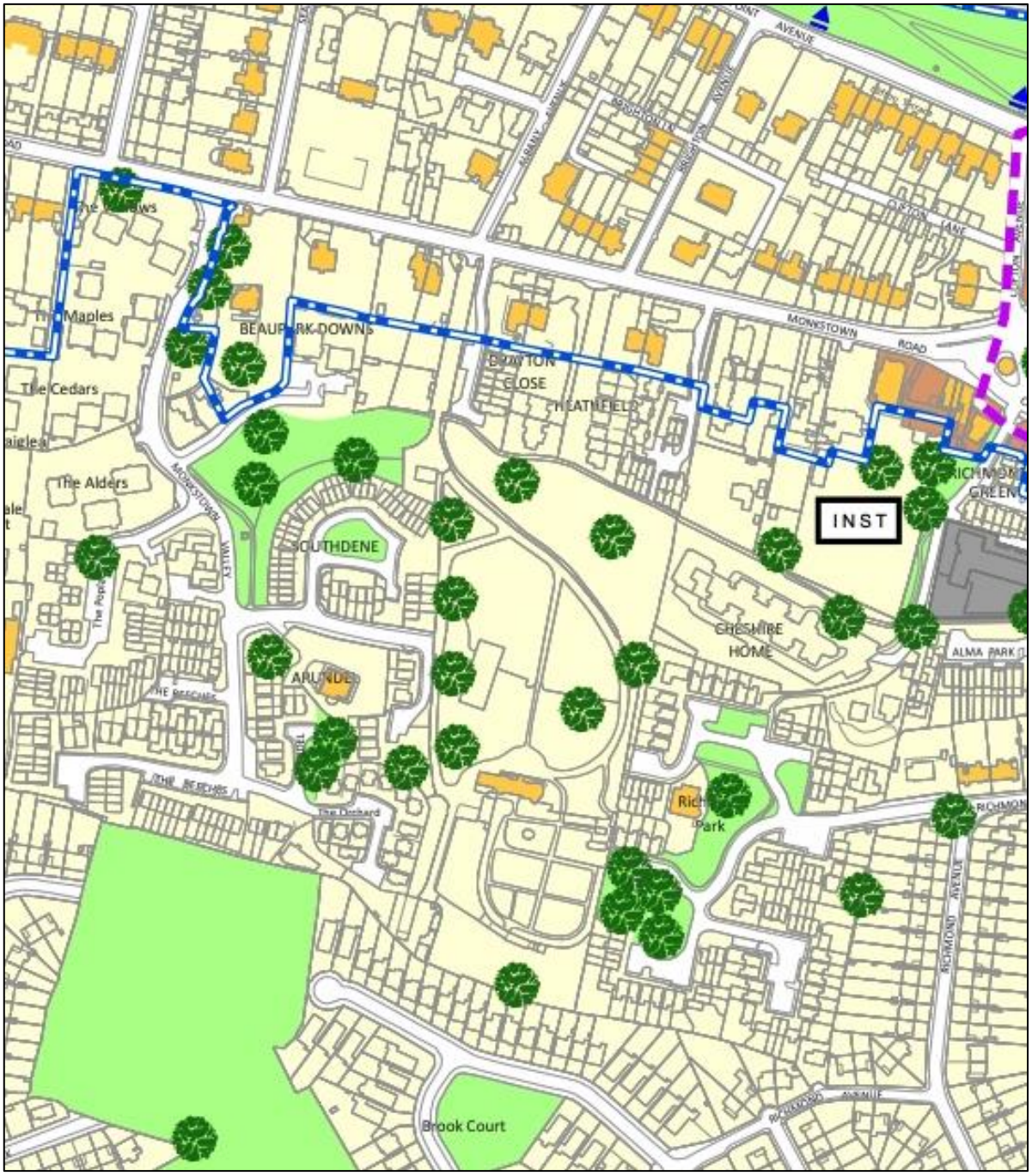

Figure 13.4 – extract of the development plan's Map 3

13.3.4.1 Dún Laoghaire Rathdown Building Heights Strategy

The Dún Laoghaire CDP contains a Building Heights Strategy in Appendix 5, which also acknowledges the national 'Urban Development and Building Heights Guidelines' (2018). Within the CDP building Heights Strategy specific Local Area Plans and Urban Framework Plans are identified in terms of policies. The site is not contained within any of these areas, but Architectural Conservation Areas such as the Monkstown ACA,

which incorporates the access leg of the site and from which the proposed development is potentially visible, are also covered. The following Policy applies:

Policy AR8: Architectural Conservation Areas (ACA) states that it is Council policy to protect the special character of places, areas, groups of structures or townscapes, which have been designated as Architectural Conservation Areas. While the purpose of a designation is to protect and enhance the special character of an area, it is important to stress that this does not preclude any appropriate forms of new development. Impact on ACAs is included in the Performance Based Criteria set out in Section 5.

The 'Coastal Fringe' is also specifically identified in terms of potential impacts from tall buildings;

> *"Most of the County's outstanding architectural heritage is located along the coast. In particular, the high quality building stock in Booterstown, Blackrock, Monkstown, Dún Laoghaire, Dalkey and Killiney has created a unique waterfront of high architectural and historical value. Views from the Irish Sea and East Pier capture the remarkable coastline with its historic seafront. Impact on the Coastal fringe is included in the Performance Based Criteria set out in Section 5"*.

As the site is not contained within a specific LAP of UFP area, Policy Policy 'BHS 3 is relevant;

> *BH3 Building Height in Residual Suburban Area - It is a policy objective to promote general building height of 3 to 4 storeys, coupled with appropriate density in what are termed the residual suburban areas of the County provided that proposals ensure a balance between the reasonable protection of existing amenities including residential amenity and the established character of the area. Having regard to the Building Height Guidelines and more specifically in order to apply SPPR 3 there may be instances where an argument can be made for increased height and/or taller buildings in the residual suburban areas. Any such proposals must be assessed in accordance with the criteria set out below in table 5.1 as contained in Section 5. The onus will be on the applicant to demonstrate compliance with the criteria. Within the built up area of the County increased height can be defined as buildings taller than prevailing building height in the surrounding area. Taller buildings are defined as those that are significantly taller (more than 2 storeys taller) than the prevailing height for the area.*

With regard to the 28 separate criteria contained in Table 5.1 of the Dún Laoghaire Rathdown Building Height guidelines, it is considered that the most relevant are;

> "Proposal should not negatively impact on an Architectural Conservation Area (ACA) or the setting of a protected structure".
>
> *"Having regard to the County's outstanding architectural heritage which is located along the coast , where increased height and/or taller buildings are proposed within the Coastal area from Booterstown to Dalkey the proposal should protect the particular character of the coastline. Any such proposals should relate to the existing coastal towns and villages as opposed to the coastal corridor".*

In order to address the second item above, it is required that *"An urban design study and visual impact assessment study should be submitted and should address where appropriate views from the sea and/or piers".* This chapter satisfies that requirement and the impact in relation to the ACA and the coastal corridor will be key considerations of the assessment contained in the following sections.

13.3.4.2 National 'Urban Development and Building Heights Guidelines' (2018)

The Urban Development and Building Heights Guidelines include policies that would, where appropriate, permit additional heights over those permissible under current Local Authority development plans. These Guidelines state that; In the event of making a planning application, the applicant shall demonstrate to the satisfaction of the Planning Authority/ An Bord Pleanála, that the proposed development satisfies the following criteria:
There are seventeen criteria then set out with the most relevant being:

At the scale of the relevant city/town
The site is well served by public transport with high capacity, frequent service and good links to other modes of public transport
Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into / enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views. Such development proposals shall undertake a landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect.

At the scale of district/ neighbourhood/ street:
The proposal positively contributes to the mix of uses and/ or building/ dwelling typologies available in the neighbourhood

At the scale of the site/building:
The form, massing and height of proposed developments should be carefully modulated so as to maximise access to natural daylight, ventilation and views and minimise overshadowing and loss of light

The above factors will be considered in the context of the following assessment sections of this chapter.

13.3.5 Identification of Viewshed Reference Points as a Basis for Assessment

Viewpoints (VPs) are the locations used to study the likely visual impacts associated with the proposed development. It is not warranted to include each and every location that provides a view as this would result in an unwieldy chapter and make it extremely difficult to draw out the key impacts arising from the proposed development. Instead, the selected viewpoints are intended to reflect a range of different receptor types, distances and angles. The visual impact of a proposed development is assessed using up to 6 categories of receptor type as listed below:

- Key Views - from features of national or international importance;
- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population;
- Major Routes;
- Amenity and heritage features.

The Viewpoints selected in this instance are set out in Table 13.5 and shown on Figure 13.5 below.

Figure 13.5 – Viewpoint Selection Map (Source: Redline Studios)

Table 13-5 Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	*Location*	*Direction of view*
VP1	Southdene in Monkstown Valley	E
VP2	Monkstown Road looking into Drayton Close	S
VP3	Purbeck Lodge	S
VP4	Monkstown Road looking into Heathfield	S
VP5	The site of the former Cheshire Home	W
VP6	Richmond Park 1	W
VP7	Richmond Park 2	W
VP8	Richmond Park 3	NW
VP9	Monkstown Valley looking into Arundel	E
VP10	Monkstown Valley looking east along the Beeches	E
VP11	Brook Court	E
VP12	Blackrock College Rugby Club	N
VP13	Dún Laoghaire West Pier	SW
VP14	Monkstown Village	SW
VP15	Monkstown Road outside Montpelier Parade	S
VP16	Seapoint Avenue looking up Albany Avenue	S
VP17	Seapoint Avenue looking up Brighton Avenue	S

VP18	Seapoint Martello Tower	SE
VP19	Queens Park	E

13.4 Potential Impacts of the Proposed Project

13.4.1 Landscape/townscape Impacts

13.4.1.1 Landscape/townscape value and sensitivity

In accordance with Section 5.5 of the GLVIA-2013, a townscape character assessment requires a particular understanding of, among other criteria, *"the context or setting of the urban area and its relationship to the wider landscape."*

This is a complex urban setting in an affluent part of South County Dublin that has evolved over millennia from the pre 8th century Carrickbrennan Church and as a monastic hub within the 12th and 13th century to a more steady increase in population and urban density over the past 200 years facilitated by construction of Dún Laoghaire harbour and the railway line to Dublin and beyond. The site itself is a remnant of the wealthy Dublin merchant houses that were originally scattered amongst predominantly farmland and beyond gate lodges fronting Monkstown Road, to be later enveloped by modern mid density housing developments. In this regard the site and the protected structure of Dalguise House is one of the remaining bastions of a bygone era, but one that has lost much of its surrounding context. Indeed, a privately owned wooded site of this size is something of an anomaly, albeit a pleasant one, in the urban fabric of the ever densifying suburb of Monkstown.

Whilst the urban area to the east, south and west is relatively consistent and generally unremarkable matrix of housing estates consisting of detached, semi-detached and terraced two storey housing, the townscape to the north has a stronger and more varied character of overlapping architectural eras and coastal influence. In this regard the site and more definitively, Monkstown Road, from which it is accessed serves as a transition to the coastal corridor. This is partly due to falling topography to both side of Monkstown Road – south towards Monkstown Valley and north towards the coast. It also marks the change in architectural styles and scale with the Monkstown ACA occurring from Monkstown Road northwards and containing some Victorian terraces of considerable scale (3-4 storeys over basement). Adding to the value and sensitivity of the coastal environs is Seapoint Linear Park, Seapoint beach and its landmark Martello Tower. To the northeast is the eclectic, but ever popular village of Monkstown set between two grand churches and hosting an intense array of cafes, restaurants, bars and speciality shops.

The site itself has a strong sylvan character generated by the mature trees that line its boundaries and occur in stands throughout the site. The majority of the site is in lawn and there is a hard surface tennis court and what appears to be gravel equestrian compounds adjacent to derelict stable buildings at the southern end of the site. The remnants of formal gardens immediately to the south of Dalguise House can be seen, but like much of the grounds

they are derelict, but tidily kept. A tree survey has been completed by the project arborist, which categorised the existing trees within the site in terms of their amenity and retention value. Of the 346 trees recorded, 6% were classed as Category A – 'High Value', 23% are Category B – 'Moderate Value' and the remainder are either Category C – 'Low Value' or Category R – Recommended for removal irrespective of the proposed development. These findings confirm that this is a parkland type landscape in general decline.

On balance of the factors outlined above and considering the transitional location and nature of the site and central study area, the sensitivity of the receiving site and townscape setting is considered to be **Medium**.

13.4.1.2 Magnitude of Landscape/townscape effects

Construction Phase

There will be permanent physical effects to the land cover of the site, which are not readily reversible following the construction stage. The open parkland landscape of the site will be changed to a high intensity residential development that will see many of the internal trees, gardens and lawn areas removed for basement excavation and replacement by circulation and storage areas. However, it is important to note that a key landscape design objective is to retain as many existing high quality / value trees as possible. A total of 95 of the 346 existing trees / tree groups that were surveyed are to be removed to facilitate the development, but 68 (72%) of these are Low quality trees with limited remaining lifespan. Of the remaining trees to be removed, 24 are of Moderate quality and only 3 are of High quality.

During the construction stage of the proposed development, which is estimated to take approximately 36 to 42 months, there will be intense construction-related activity within and around the site, including approach roads. This will include, but is not limited to:

- HGVs transporting materials to and from the site;
- Movement of heavy earth-moving machinery and the erection of several tall tower cranes on-site;
- Temporary storage of excavated materials and construction materials on-site;
- Gradual emergence of the three proposed blocks, and associated works;
- Security fencing and site lighting.

Early construction stage effects will mainly relate to the comings and goings of construction vehicles to and from the site and the presence of tower cranes. Much of the basement and ground level work as well as the movement of machinery / workers and stockpiling of materials will occur behind site perimeter hoardings. Construction stage impacts will be greatest as the emerging, scaffolding covered, apartment building shells rise into view for

surrounding receptors and contribute negatively to views and townscape character. However, construction stage impacts on landscape/townscape character will be **'short-term'** (i.e. lasting 1-7 years TBC), in accordance with the EPA definitions of impact duration. Furthermore, the context of this construction activity is within a broad suburban context where the construction of multi-storey buildings has been long established and is a near constant feature.

On the basis of the reasons outlined above, the magnitude of construction stage landscape/townscape impacts is deemed to be **Medium**. When combined with the Medium sensitivity of the receiving landscape, the overall significance of construction stage landscape/townscape impacts is considered to be **Moderate** and of a **Negative** quality and **Short Term** duration.

Operational Phase

Following the completion of the proposed works the former parkland setting of Dalguise House and gardens will be permanently transformed and occupied by nine apartment blocks, gate lodges, parking buildings / areas, vehicle and pedestrian circulation routes as well as intensive landscaped areas. Whilst 95 trees of predominantly low quality will be removed to facilitate the development, these will be supplemented by the addition of 213 new trees with many of these being up to 60-70cm girth (9m+ tall) at planting. Thus, there will still be some substantial areas of parkland landscape and mature trees retained and/or replaced and Dalguise House will remain as a stately centrepiece of the development with a generous and reverent apron areas around it. In other words, the site will be almost completely transformed in terms of land use scale, intensity and character. However, this is in the form of a high quality of design and materials that represents the transition of the site from a slightly ambiguous heritage remnant that could be read as something of a void rather than a jewel in the urban fabric of the ever evolving suburb of Monkstown, to a rejuvenated, and vital residential node that still incorporates its critical heritage and landscape elements. Those being, Dalguise House and enough of its sylvan, parkland landscape character to generate a campus-style setting with a high degree of publicly accessible play and amenity space (see Figure 13.6).

Figure 13.6 – Sylvan Landscape Concept (extracted from the Landscape Design and Access Statement – Cameo & partners)

The intensity and scale of development within the site and its immediate surrounds is substantially increased, but this is in the context of the site transforming from one that is a veritable development void to one that represents the modern push towards high density / high quality urban living particular within one of south Dublin's most sought-after neighbourhoods.

Beyond the bounds of the site, landscape/townscape impacts will relate entirely to the development's impact on the character of the receiving landscape/townscape.

The most notable landscape/townscape impacts of the proposed development will result from the permanent presence of eleven apartment buildings ranging in height from 9 storeys near the centre of the site, 6, 7 and 4 storeys along the eastern and western sides, down to 3 storeys at the southern end of the site where they abut the rear gardens of lower rise / density residential housing. In this regard, there will be a legible transition of scale from the central to peripheral portions of the site as required by the Building Height Guidelines (see Photomontage set). Surrounding residences will be further buffered and absorbed by the retention and supplementation of much of the boundary wooded areas and mature trees. This is evidenced by the arboricultural impact assessment, landscape design drawings and the

photomontage set, which illustrates that only the nearest apartment blocks, and occasional the taller central Block E, rise just above or between sections of dense intervening vegetation even when viewed from relatively close by. The terrain of the site, being within the comparatively low lying ground of Monkstown Valley also serves to deemphasise the height of the proposed apartment blocks when seen from beyond the site particularly to the north, south and west. Notably from Monkstown Road and the core of Monkstown Village, the development is barely discernible, if visible at all. Consequently, there will be little effect on the critical character of the Monkstown ACA and the sensitive coastal corridor.

For the reasons outlined above, the magnitude of operational stage landscape/townscape impacts is considered to be **Medium-Low**. In accordance with the Landscape/Visual significance matrix contained in Table 1.3, the combination of a 'Medium-low' townscape sensitivity judgement and a 'Medium-low' townscape impact magnitude judgment results in a **Moderate-slight** significance of townscape impact. On balance of the developments scale and intensity weighed against its overall quality of design and materials, the quality of effect is deemed to be marginally Negative – i.e. **Negative-Neutral** and of a **Permanent** duration.

13.4.2 Visual Impact Assessment

13.4.2.1 Visual Receptor Sensitivity

In consideration of the visual receptor criteria set out in section 1.3, the main variation in the nature of views and those availing of those views, in this instance, relates to an overt sense of place and in particular whether they are located within the heritage context of the Monkstown ACA and / or coastal context valued for its scenery and recreational amenity. The viewpoints contained within these areas, predominately north of Monkstown Road and within Monkstown Village are deemed to be of Medium sensitivity to visual change. The two exceptions being the West Pier (VP13) and Seapoint Martello Tower (VP18), which are both deemed to be of High-medium sensitivity. Those receptors located within the residential neighbourhoods to the east, south and west of the site are deemed to be of Medium-low sensitivity.

13.4.2.2 Magnitude of Visual Effect

The assessment of visual impacts at each of the selected viewpoints is aided by photomontages of the proposed development. Photomontages are a 'photo-real' depiction of the scheme within the view, utilising a rendered three-dimensional model of the development, which has been geo-referenced to allow accurate placement and scale. For each viewpoint, the following images have been produced:

1. Existing View; and
2. Montage View upon completion of all proposed works

VP No.	*Title and description of existing view*	*Receptor Sensitivity*	*Description and Magnitude of Visual impact*	*Residual Significance / Quality / Duration of Visual Impact*
VP1	**Southdene in Monkstown Valley** This is a view across an enclosed cul-de-sac from a short distance west of the site. The cul-de-sac has a small green area in the middle planted with specimen trees and also use for parking. It is surrounded by semi-detached dwellings. In the near middle distance are a series of large conifer trees which contain the view to the east.	**Medium-low**	The nearest apartment block from the proposed development will be partially and intermittently visible through the stand of conifers. Although it is not clearly visible, it adds to the containment of the scene and the general sense of enclosure. Windows from the upper floor of the apartment building are visible, but given the degree of screening there is little sense of overlooking in relation to the foreground cul-de-sac. Nor is the development considered to be overbearing in terms of its scale and proximity. For the reasons outlined above, the magnitude of visual impact is considered to be Medium/low, but the quality of the effect is deemed to be negative.	**Moderate-slight/ Negative / Permanent**
VP2	**Monkstown Road looking into Drayton Close** This is a relatively enclosed view from Monkstown Road looking south along a communal driveway that affords access to a series of two-storey dwellings. The setting is enclosed by mature amenity planting within and around these properties.	**Medium**	The proposed development is partially and intermittently visible through a heavy veil of intervening vegetation which affords slightly increased visibility during winter months. During summer months the development is unlikely to be noticed at all. The most noticeable effect is a marginally increased sense of enclosure to the south, but this has little bearing on visual amenity in the immediate street scene. For this reason the magnitude of visual impact is considered to be Low-negligible, albeit the quality of the defect he is marginally negative.	**Slight/ Negative/ Permanent**

VP3	**Purbeck Lodge** This view is similar in nature to VP2 in that it looks south down a local access road that serves a terrace of recently constructed two-storey dwellings. It is also enclosed by a considerable number of mature trees and general amenity planting. The most distinctive of which, is a series of tall pines in eucalypts that define the skyline.	**Medium**	This is essentially the entrance view of the proposed development and the nearest block of apartments stands prominently on alignment with the laneway. A number of existing trees, including tall mature conifers will be removed at the northern end of the site, which opens up visibility into the nearest portions of the development. Whilst prominent, the proposed apartment buildings are of a high quality of design and finish and did not appear overbearing in this visual setting. Nor do they appear to overlook any of the properties within the foreground to a noticeable degree and this is partly because the rear yards of these dwellings are oriented in a different direction (east rather than south). On the basis of these reasons, the magnitude of visual impact is deemed to be Medium-low. As the proposed development represents a distinct increase in the intensity of the built development within this sylvan setting, the quality of the effect is judged to be negative.	**Moderate-slight/ Negative/ Permanent**
VP4	**Monkstown Road looking into Heathfield** This is a heavily enclosed view from Monkstown Road peering in the front gates of the Heathfield residential cul-de-sac. The fore-to-middle ground is flanked by mature broadleaf trees and a series of residential dwellings can be seen descending down the access road further to the south.	**Medium**	The proposed development presents the roofline and upper level profiles of a series of apartment blocks above and between intervening vegetation. The apartment blocks are not a strongly apparent feature from here, but they do provide a sense of enclosure to the southerly vista and with that an increased intensity and scale of development within the scene. However, the development does not detract from the visual amenity of the street scene to more than a marginal degree and therefore, the magnitude of visual impact is deemed to be Low and the quality of affect negative.	**Slight / Negative/ Permanent**

VP5	**The site of the former Cheshire Home** This is a view from near to the eastern side of the site where a local laneway provides access to a series of dwellings and a pedestrian access links up to another cul-de-sac further to the south. In the foreground to the west is a single-storey nursing home building that is no longer in use. It is flanked and backed by long established tall vegetation around its boundaries.	**Medium-low**	The nearest south-eastern blocks of the proposed development will be seen to rise above and between the vegetation beyond the nursing home building at a modest distance. They are of a high standard of design and material finish and have a generally light construction that does not appear overbearing in terms of height or massing. The apartment blocks contribute to an increased scale and intensity development within this low density residential setting, but do not appear out of place. For these reasons the magnitude of visual impact is considered to be Medium-low and the quality of effect, Negative.	**Moderate-slight/ Negative/ Permanent**
VP6	**Richmond Park 1** Viewpoints VP6, VP7 and VP8 are all from the same residential enclave to the east of the site (Richmond Park). The first in this series looks across a residential cul-de-sac of detached and semi-detached dwellings surrounding a communal green that hosts a number of mature broadleaf specimen trees. Also visible is the heritage building of Richmond House, which was the original homestead associated with the land now occupied by the foreground residential development. Immediately beyond the dwellings at the end of the cul-de-sac is it thick band of mature conifers with tall eucalyptus trees rising above.	**Medium-low**	The nearest of the proposed apartment buildings emerges above the line of new semi-mature broadleaf trees that have replaced the dense line of conifers to the rear of the dwellings that line this cul-de-sac. There is a minor sense of scale conflict relative to the foreground dwellings, but without a distinct sense of overbearing. Furthermore, the band of vegetation that lies between the foreground cul-de-sac and the proposed development will prevent any overlooking of the existing dwellings. Overall, the increased intensity and scale of built development within the view is considered to contribute a Medium-low magnitude of visual impact and this will be of a Negative quality. This magnitude of impact is considered to increase to Medium during winter months when the broadleaf trees afford a veil of screening but the mass of the nearest apartment block will be more apparent.	**<u>Summer</u>** **Moderate-slight/ Negative/ Permanent** **<u>Winter</u>** **Moderate / Negative/ Permanent**

VP7	**Richmond Park 2** This viewpoint is very close to VP6 and the context is very similar except that Richmond House is a more prominent feature of the foreground, albeit through the mature trees that occupy the foreground green. This view is also more enclosed by mature trees, which contain the view in the direction of the site.	**Medium-low**	Again, both summer and winter views have been prepared in respect of this scene and during summer months the proposed development will be barely discernible through the trees in the near distance. During winter months it will become more apparent, but it is still filtered through a heavy veil of winter branches. In both cases, the effect is more a sense of enclosure to the west than a clear view of the proposed development. There is a marginal degree of increased build development, but this has little impact on visual amenity in this context. For these reasons, the magnitude of visual impact is deemed to be Low and the quality of that effect is to be negative.	**Slight/ Negative/ Permanent**
VP8	**Richmond Park 3** This view peers along a narrow residential street framed by the gable end of dwellings to the right and the front façade of two-storey dwellings to the left. The principal context is a communal green area in the middle of the cul-de-sac, which is occupied by mature broadleaf trees. The green itself is surrounded by semi-detached two storey dwellings. The scene is contained by a mature band of conifers to the west.	**Medium-low**	A very small section of the proposed development can be seen in gaps through the stand of conifers that encloses this cul-de-sac. There will also be some removal of conifers at the southern end of the treeline, which serves to open up the setting slightly without introducing the view of any buildings beyond. Again, both summer and winter images have been provided for this view and although there is a marginally clearer view of the development during winter months, it will have a negligible impact on the visual amenity experienced in this setting. Consequently, the quality of the effect is also deemed to be Neutral.	**Negligible/ Neutral/ Permanent**
VP9	**Monkstown Valley looking into Arundel** This is a view eastward along a residential cul-de-sac to the west of the site, which has a green space on the nearest corner to the left and stone walls to the right. Two storey semi-detached dwellings define the left hand side of the street is it winds its way past the original heritage building of this former demesne,	**Medium-low**	Several of the proposed apartment buildings can be seen rising between the tall mature conifers that contain the view. They serve to enclose the vista to a small degree and also add to the intensity and scale of development in a general sense. However, they are by no means overbearing in relation to the foreground setting and do not give a strong sense of overlooking either. Both summer and	**Moderate-slight/ Negative/ Permanent**

	which is tucked behind mature vegetation at the right hand side of the view. As with so many of these views the containment is provided by mature conifers at a relatively modest distance.		winter views have been prepared from this viewpoint and there will be a slightly clearer view into the site during winter months, but this does not result in a marked increase in visual impact. Overall, the magnitude of visual impact is considered to be Medium-low and the quality that affect, Negative.	
VP10	**Monkstown Valley looking east along the Beeches** This leafy street scene consists of single storey dwellings along the left side of the street with parking to the front and a series of recessed car parks interspersed with tree planting defining the right-hand side of the street. A mix of Broadleaf vegetation provides a modest degree of containment at the end of the street.	**Medium-low**	Only very small sections of the roof profile of the proposed apartment blocks can be seen from here between sections of vegetation that contain the street scene to the east. There is a very subtle sense of increased enclosure to the setting and with it a subtle increase in the intensity of built development. Both summer and winter shots have been prepared from this viewpoint and the effect is essentially the same. That is, a magnitude of visual impact of Low-negligible. The quality of the effect is deemed to be marginally negative i.e. Neutral-Negative.	**Slight-imperceptible/ Neutral-negative/ Permanent**
VP11	**Brook Court** This is a view from the south of the development along the residential enclave of Brook Court where the left-hand side of the street is defined by tall hedges and there is a communal green to the right. Slightly elevated, detached, two-storey dwellings run across the scene in the near middle ground and these are backed by a combination of tall pines and eucalyptus trees.	**Medium-low**	The proposed development will not be visible from here due to intervening screening by buildings and vegetation and consequently, the magnitude of visual impact is deemed to be Negligible/ Neutral. This judgement is unaffected by seasonality as can be seen by the summer and winter shots that have been prepared from this viewpoint.	**Imperceptible/ Neutral/ Permanent**
VP12	**Blackrock College Rugby Club** This is a diagonal view to the northeast across the playing pitches of Blackrock Rugby Club and consequently it is an open view defined in the distance by a dense combination of residential	**Medium-low**	The tallest central blocks of the proposed development can be seen rising in the distance just above the vegetated skyline. They will add to the intensity of built development as well as the diversity of built form within this scene. However, the architectural design and surface finishes are	**Slight/ Negative/ Permanent**

	dwellings and long established vegetation. The foreground also consists of tall light poles and a cell tower which provide a vertical imprint on the otherwise horizontal nature of the view.		of a high-quality and the proposed development does not appear out of place within this recreational / residential setting. For the reasons outlined above, the magnitude of visual impact is considered to be low, but the quality of that impact will be negative. Again, seasonality has little bearing on the effect as evidenced by the comparison of the summer and winter views provided.	
VP13	**Dún Laoghaire West Pier** This is the view from the upper tier of the West Pier that contains Dún Laoghaire Harbour. The view in question looks back along the pier in the direction of Monkstown Village and takes in the immediate harbour setting to the left and the bay containing Seapoint to the right. There is a series of apartments from various eras that run along the coast road beyond the harbour and there is also a Georgian terrace they can be seen above the road in the direction of Seapoint. Beyond is a skyline of vegetation and rooftops with the most prominent features being the churches spires within Monkstown Village. In the far distance can be seen the profile of the Dublin Mountains with communication masts on top.	**High-medium**	The tallest block of the proposed development can be seen rising between the vegetated middle distance skyline and the distant mountain profile and therefore the level of contrast is minimal. The apartment block does contribute marginally to the intensity and dispersal of multistorey development within this richly diverse coastal scene, albeit set back by a considerable distance from the coastline itself. It is not considered in the scale, nature or design of the development is conflicting with other development within this diverse vista and overall the magnitude of visual impact is considered to be Low-negligible, but of a marginally negative quality i.e. neutral and negative.	**Slight/ Neutral-negative/ Permanent**
VP14	**Monkstown Village** This is a view from within the central portion of Monkstown Village, which is an eclectic collection of shops and restaurants that surround two churches and contains paved communal areas that serve as popular meeting points. In the direction of the proposed development is a row of retail and	**Medium**	Only a fraction of the roof profile of one of the tallest proposed apartment blocks will be potentially visible from here rising above the roof of an intervening building that defines the western side of the central square in Monkstown Village. This will be barely discernible and unlikely to be noticed by a casual observer. It would therefore, have a little bearing on visual amenity in this rich	**Imperceptible/ Neutral/ Permanent**

	hospitality uses at ground floor level with offices and restaurants above. Rising between the various buildings and mature trees within both the foreground and middle ground context.		and complex scene. Consequently, the magnitude of visual impact is deemed to be negligible and the quality of the effect will be neutral.	
VP15	**Monkstown Road outside Montpelier Parade** This is a relatively contained view from Monkstown Road where tall walls on the left hand side of the road and mature trees on the right hand side channel the view towards Monkstown Village further to the northeast. Immediately beyond the mature treeline can be seen the handsome Georgian terrace of Montpelier Parade, which is a terrace of three storey plus basement residential buildings.	**Medium**	The proposed development will not be visible from here due to a combination of screening from Touraine buildings in vegetation. Consequently, the magnitude of visual impact is negligible by default.	**Imperceptible/ Neutral/ Permanent**
VP16	**Seapoint Avenue looking up Albany Avenue** This view is from the coast road looking along the narrow Albany Avenue. The street scene is contained by high walls and vegetation with only one dwelling, a slightly dilapidated Victorian Villa, providing a focus to the street scene. Containment is provided by vegetation a short distance beyond.	**Medium**	The proposed development will not be visible from here due to a combination of screening from Touraine buildings in vegetation. Consequently, the magnitude of visual impact is negligible by default.	**Imperceptible/ Neutral/ Permanent**
VP17	**Seapoint Avenue looking up Brighton Avenue** This view is similar in nature to that described above in relation to the VP16 in that it is a viewing inland from the coast road along Brighton Avenue, which links up to Monkstown Road. The most prominent feature of this view is the tall Heritage terrace on the corner of Brighton Avenue and Seapoint Avenue.	**Medium**	Only a fraction of the roof profile of one of the tallest apartment blocks can be seen directly on alignment with Brighton Avenue where it rises just above the intervening vegetated skyline. It will not contribute to the sense of enclosure, but it does provide a more rigid horizontal form of containment relative to the existing tree line. This is of minor consequence to visual amenity in the context of this setting and the overall the magnitude of visual impact is deemed to be Negligible and Neutral.	**Imperceptible/ Neutral/ Permanent**

VP18	**Seapoint Martello Tower** This is an illustrative view from the popular bathing location of Seapoint. The immediate context is that of a curved coastal promenade with embankment above where the railway line cuts through. Above the embankment and low stone wall can be seen terraces of Georgian residential buildings. Further east the residential development is of a smaller scale and more eclectic range of designs and eras.	**High-medium**	The proposed development will not be visible from here due to a combination of screening from Touraine buildings in vegetation. Consequently, the magnitude of visual impact is negligible by default.	**Imperceptible/ Neutral/ Permanent**

13.5 Mitigation Measures

It is not considered necessary to introduce specific Townscape and Visual mitigation measures as the main siting, design and landscaping measures are all deemed appropriate and are integral to the design of the development as already assessed. This assessment should be read in conjunction with the landscape design package and arboricultural report, which include drawings, details of trees to be removed as well as proposed planting and hardscaping.

13.6 Residual Impacts

As there are no specific Townscape and Visual mitigation measures proposed, residual impacts are deemed to be the same as those already assessed in section 13.4 and 13.5.

13.7 Monitoring

Monitoring measures are not required in respect of Townscape and Visual effects, particularly as there are no specific mitigation measures proposed.

13.8 Reinstatement

There will not be any aspects of this permanent development that will result in reinstatement or associated effects form a Townscape and Visual Perspective.

13.9 Interactions

The main interactions associated with the Townscape and Visual assessment relate to;

- Cultural and Architectural Heritage – Design treatment of perimeter wall and visual relationship of newly proposed and retained structures.
- Architectural design - Scale, massing, setback and façade treatments and how these contributes to / ameliorates landscape and visual impacts.
- Landscape design – Retention of existing mature trees / provision of new planting and how this contributes to / ameliorates landscape and visual impacts
- Population and Human Health - Potential effects arising from visual effects upon surrounding existing dwellings

13.10 Cumulative Impacts

There are a number of developments of a similar scale and nature to the proposed development (50 residential units or more) within 2km of the site that have been granted planning permission or are currently in planning. The vast majority of these will not be visible in conjunction with the proposed development or will be distant, indistinct background developments in the context of views of the development (or vice versa). This is particularly true of those that exist beyond the 1km radius TVIA study area of the proposed development, which includes all but two of the developments listed in Chapter 21 Cumulative Impacts. Many of the larger residential developments occur within and around the higher density node of Blackrock, which is contained on lower ground around 1.5km to the west of the site.

Notwithstanding the low degree of cumulative visual impacts between the proposed development and the distant committed / planned projects beyond 1km away, collectively they illustrate a trend towards higher density apartment living in the affluent suburbs of South Dublin. This pattern is seeing large, historic house and garden sites or brownfield sites being repurposed with the retention and incorporation of protected structures where relevant. This trend will contribute to a gradual change in the urban fabric and townscape character though the increased scale and intensity of development in a general sense. It will result in a subtle increase in the sense of enclosure within the locality of such development particularly where two or more apartment developments occur within several hundred metres of each other, such as around Blackrock.

The closest permitted development of a similar nature is less than 50m away to the east of the site. This is the former Richmond Cheshire Nursing Home (D19A/0378+ABP-305843-19) where planning iterations have resulted in a permitted development of 72 residential units across two apartment blocks. However, there is also a current planning application for 96 residential units that has been refused permission by DLRCC, but appealed to An Bord Pleanála by the applicant. Whichever development eventuates, it will be visible in conjunction with the proposed development for residents in the immediate locality to the east of the site. Indeed, it may screen the proposed development in some instances. The two developments will considerably increase the scale and intensity of built development within the immediate vicinity with the lion's share of that contribution coming from the Dalguise development due to its larger comparative scale.

The other notable development currently in planning is at Stradbrook the Stradbrook House site around 500m to the south of the proposed development where 108 apartments are proposed. There will be some potential for intervisibility between the proposed development and the Stradbrook development but mainly from the open areas around the intervening Blackrock Rugby pitch. Within enclosed residential areas in the vicinity of both developments,

clear views are difficult to obtain and therefore combined clear views will be even more scarce. Again, there will be a general cumulative effect on landscape fabric and character relating to the increased intensity and scale of residential development in this heretofore mid-low density residential area. However, such effects are characteristic of emerging, necessary trends in urban density.

Overall, it is considered that there will not be any significant cumulative effects arising for the proposed development in conjunction with other committed or planned development in the area.

13.11 'Do Nothing' Effect

In a 'do-nothing' scenario Dalguise House and its grounds are likely to remain as they are in the short-term. However, given the pressure for increased residential density in this area and in Dublin generally, it is likely that further proposals for higher density development would result in the site's redevelopment in a medium to long term timeframe.

13.12 Conclusion

This Townscape and Visual Impact Assessment has considered the Townscape effects and visual effects separately in accordance with the GLVIA (2013). The former takes account of physical landscape / townscape effects and also changes to landscape character. The latter considers the impact on viewers residential at particular locations and/or engaged in particular activities.

In terms of landscape/townscape sensitivity the site itself is considered to be of distinct sylvan character and heritage importance in its own right, being something of an urban demesne containing and surrounding Dalguise House. There is a large number of mature trees within the site, but the majority of these have limited retention value beyond 10 years and the parkland setting is therefore in decline. There is also a number of dense mature Leylandii around the perimeter of the site that do not contribute positively to the parkland setting. In the wider context, the site is in a transitional area between the heritage portion of the affluent Monkstown Village i.e. north and east of Monkstown Road and a less remarkable residential area of mid-low density residential suburbs to the south of Monkstown Road in the direction of Stradbrook Road. On balance the receiving townscape is considered to have Medium sensitivity.

There will be physical construction stage impacts that will involve considerable stripping of land cover and vegetation within the site, but importantly retaining the vast majority of the highest value tall broadleaf trees, particularly around the perimeter, that currently screen the site and add to its sylvan character. Construction stage impacts will be negative in terms of quality, but are only short term in duration.

The operational stage townscape impacts are a balance between the substantially increased scale and intensity of modern built development within a site that currently represents partly derelict underutilisation of a substantial, but hidden area of heritage open space that contributes to the general sylvan character of the landscape fabric, but less so to the overt landscape character of the local area. The proposed development allows for a rejuvenation and repurposing of the site and Dalguise House in a manner that secures its utility and relevance for decades to come and sets it within a campus-style urban form that benefits from the leafy character to be retained and heavily supplemented. Given its location within the relatively low lying ground of Monkstown Valley and the degree of enclosure and screening by buildings and vegetation, the contribution of the proposed development to the townscape character of the wider study area is not strong as the scale of the development would suggest. On balance of these factors, the magnitude of townscape impact is deemed to be Moderate-slight and of a marginally negative quality i.e. Neutral-Negative.

Eighteen viewpoints have been utilised for the visual impact assessment and these represent a broad range of viewing distances and angles, viewing contexts and visual receptor types. Those contained within the Monkstown Architectural Conservation Area or from coastal features are considered to be of higher sensitivity (Medium and High-medium sensitivity) than views from within more typical suburban areas (Medium-low) sensitivity.

The significance of visual impacts generally varied between Moderate-slight at five of the closer viewpoints, to Imperceptible, generally from more distant viewpoints where intervening screening limits or eliminates potential views of the proposed development. The single Moderate impact was deemed to occur at VP6 within Richmond Park, but only during winter months when intervening trees are bare of leaves. Aside from a lesser degree of screening, these new broadleaf trees are preferable to the overall sylvan setting than the dense/dark band of existing conifers that will be removed along the intervening boundary. In all instances, the quality of effect was deemed to be on the Negative side of the spectrum i.e. Negative or Neutral-Negative as the upper levels of the proposed buildings would typically rise into view above intervening buildings and vegetation adding to the general scale and intensity of built form, but without the full design context. The highest levels of effect occur at VP1, VP3, VP5, VP6 and VP9, which are all in relatively close proximity to the site. Given their proximity and lower density residential context, it is testimony to the appropriately designed scale and form of the proposed development as well as the high degree of perimeter screening, that impact significance is not greater than Moderate-slight. Despite the tallest of the proposed apartment blocks rising above and between intervening treetops, these are centrally located within the site affording increased distance buffering and there is not an undue sense of overbearing or overlooking of residential proprieties in any of the views.

From the more sensitive receptors within the Monkstown ACA and from the Martello Tower at Seapoint, the proposed development tends not to be visible at all or is seen as back-lands development along south oriented access lanes from Monkstown Road. From the more distant viewpoint 13 on Dún Laoghaire West pier, within its unimpeded fore-to-middle ground, the tallest blocks are seen to rise into view above the handsome heritage terraces that front the coastal corridor, but against a backdrop of the Dublin Mountains. Whilst this is a negative impact it is not a particularly noticeable one and there is a distinct sense of setback from the sensitive coastal context.

In terms of cumulative impacts, there are a number of other large residential developments that are committed or planned within the wider area i.e. beyond the 1km radius TVIA study area. However there are only two in the near vicinity that will have a material cumulative impact and potential for noticeable intervisibility. These include the nearby former Richmond Cheshire nursing home site (<50m away) and the Stradbrook House site (c. 500m away).

Whilst they each contribute towards a trend for an increased scale and density of residential development in the area, there is relatively little intervisibility likely between the developments and cumulative effects are not deemed to be significant.

13.13 OVERALL SIGNIFICANCE OF IMPACT

On the basis of the Townscape and Visual Impact Assessment documented herein, it is considered that the proposed Dalguise Residential development will not result in any Significant and Negative effects.

13.14 References

Relevant Guidelines & Legislation

Dún Laoghaire Rathdown County Development Plan 2022-2028
'Guidelines for Landscape and Visual Impact Assessment' (GLVIA-2013)(Third Edition) by the Landscape Institute and Institute of Environmental Management & Assessment (UK)
Urban Development and Building Heights Guidelines' (2018)

14.0 CULTURAL HERITAGE AND ARCHAEOLOGY

14.1 Introduction

14.1.1 General

IAC Archaeology has prepared this chapter to assess the impact on the archaeological and cultural heritage resource of the proposed development at Dalguise House, Monkstown, County Dublin (Figure 14.1, ITM 722808/728446). This chapter was prepared by Faith Bailey (MA, BA (Hons), MIAI, MCIfA). Faith has over 18 years' experience in archaeological and cultural heritage consultancy, responsible for the production of EIAR and assessments for all aspects of development nationwide.

Chapter 15 of this EIAR deals specifically with the architectural heritage of the proposed development area and is cross referenced where applicable to avoid replication of information.

Figure 14.1 – Site location

This study determines, as far as reasonably possible from existing records, the nature of the archaeological and cultural heritage resource in and within a 500m study area of the proposed development, using appropriate methods of study. Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets,

their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets (Chartered Institute for Archaeologists 2014).

This leads to the following:

- Determining the presence of known archaeological sites that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the impact upon the setting of known cultural heritage sites in the surrounding area; and
- Suggested mitigation measures based upon the results of the above research.

14.1.2 Definitions

In order to assess, distil and present the findings of this study, the following definitions apply:

'Cultural Heritage' where used generically, is an over-arching term applied to describe any combination of archaeological and cultural heritage features, where –

- the term 'archaeological heritage' is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places).

- the term 'cultural heritage', where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

14.1.3 Significance of Effects

Impact definitions (description of effects) are as per Environmental Protection Agency (EPA) guidelines (2022):

Imperceptible
An effect capable of measurement but without significant consequences

Not significant
An effect which causes noticeable changes in the character of the environment but without significant consequences

Slight
An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Moderate
An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.

Significant
An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

Very Significant
An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment

Profound
An effect that obliterates sensitive characteristics.

Significance of Effects as defined by the Environmental Protection Agency (2022) Guidelines (pg. 50).

14.1.4 Consultations

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage (DoHLGH) – the Heritage Service, National Monuments: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database and Preservation Orders;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- Dún Laoghaire-Rathdown County Council: Planning Section; and
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps.

14.1.5 Guidance and Legislation

The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Act, 1930 to 2014;
- The Planning and Development Acts, 2000 (as amended);
- Heritage Act, 1995 (as amended);
- Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2015, EPA;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Report, 2022, EPA;
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands; and

14.2 Methodology

Research has been undertaken in two phases. The first phase comprised a paper survey of all available archaeological, historical, and cartographic sources. The second phase involved a field inspection of the proposed development area.

14.2.1 Paper Survey

- Record of Monuments and Places for County Dublin;
- Sites and Monuments Record for County Dublin;
- National Monuments in State Care Database;
- Preservation Orders List;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Dún Laoghaire-Rathdown County Development Plan 2022-2028;
- Place name analysis;
- Aerial photographs; and
- Excavations Bulletin (1970-2022).

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as 'un-located sites' and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. SMR sites are also listed on a website maintained by the Department of Housing, Local Government and Heritage (DoHLGH) – www.archaeology.ie.

National Monuments in State Care Database is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument.

The Minister for the DoHLGH may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Preservation Orders List contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the National Monuments

Act 1930. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the National Monuments (Amendment) Act 1954. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

The Topographical Files of the National Museum of Ireland are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

Documentary sources were consulted to gain background information on the archaeological and cultural heritage landscape of the proposed development area.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The *Dún Laoghaire-Rathdown County Development Plan 2022-2028* was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development area.

Place Names are an important part in understanding both the archaeology and history of an area. Place names can be used for generations and in some cases have been found to have their root deep in the historical past.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey and Google Earth.

Excavations Bulletin is a summary publication that has been produced every year since 1970. This summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP. This information is also available online (www.excavations.ie) from 1970-2022.

14.2.2 Field Inspection

Field inspection is necessary to determine the extent and nature of archaeological and historical remains, and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

The archaeological field inspection was carried out on the 5th July 2022 and entailed –

- Walking the proposed development and its immediate environs.
- Noting and recording the terrain type and land usage.
- Noting and recording the presence of features of archaeological or historical significance.
- Verifying the extent and condition of any recorded sites.
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

14.3 Baseline Environment

14.3.1 Archaeological and Historical Background

The proposed development area is located at Monkstown within the townlands of Dunleary and Monkstown, parish of Monkstown, and barony of Rathdown, County Dublin. There are no archaeological sites located within the development area; however, there are seven recorded monuments within 500m (Figure 14.2). The nearest of these sites consists of a Martello tower (DU023-010), located c. 420m to the northwest. The site lies within an extensive curtilage to the south of Monkstown Road and is surrounded by modern developments. The Stradbrook Stream (sometimes referred to as the Monkstown Stream), flows east-west partially through the development area at Drayton Close and abuts the northern extent of the Dalguise lands.

It is noted that Dalguise House, located within the proposed development area, is a Protected Structure (RPS 870), as listed in the *Dún Laoghaire-Rathdown County Development Plan 2022-2028* and the entrance into the site is located within the Monkstown Architectural Conservation Area (ACA). There are a number of other structures/areas of architectural heritage merit located within the development area, including the setting and circulation routes (designed landscape), gate lodges, vinery/greenhouses, walled garden and stable yard and associated structures. These elements are dealt with in detail within Chapter 15 Architectural Heritage.

Prehistoric Period

Mesolithic Period (6000–4000 BC)

While recent discoveries may provide evidence of an Upper Palaeolithic human presence in the southwest of Ireland (Dowd and Carden 2016), much of the island is believed to have been under extensive glaciation at this time. Stray finds, including caches of flint flakes from Rathfarnham, Dun Laoghaire, Dalkey Island, and Loughlinstown, indicate small-scale transient

settlement along the riverbanks and seashores of County Dublin during the Mesolithic Period. There is no recorded evidence of any Mesolithic sites in the vicinity of the proposed development site, although the area would have been attractive to Mesolithic groups.

Neolithic Period (4000–2500 BC)

The Neolithic period saw the introduction and adoption of agriculture in Ireland. Significant change accompanied the transition from hunter-gather lifestyles to the more sedentary lifestyle of farming. Forestry was cleared to facilitate agriculture and field boundaries were constructed to contain livestock. A new concern for claiming territory on which to farm contributed to the tradition of megalithic tomb construction which emerged during the Neolithic period. These monuments were both burial places and ceremonial centres for the community that built them. They would have required significant resources, workforce and organisation to construct. South County Dublin has a number of surviving megalithic tombs, although none are recorded in the environs of the proposed development site.

There are no recorded sites of Neolithic date in the surrounding environs of the proposed development area. However, the area would have appealed to Neolithic settlers. This is evident in the fact a polished stone axe was recovered from Monkstown, suggesting Neolithic activity in the area (Corlett 2013).

Figure 14.2 Recorded archaeological sites within the study area of the proposed development area

Bronze Age (2500–800 BC)

The Bronze Age began with widespread advances in metallurgy. The most common indication of Bronze Age activity is the *fulacht fia* or burnt mound. These are sites which were used for heating water using hot stones in a trough, possibly for a variety of purposes. Very often, these sites survive only as spreads of charcoal rich soil with heat-affected stone inclusions having

been heavily disturbed by later agricultural activity. There are no recorded *fulachta fia* in the vicinity of the proposed development site.

Fragments of two Bronze Age gold torcs (NMI 107/108) and a bronze pin (NMI 5286: W139) were discovered in Donnybrook, c. 5km to the northwest. A personal gold ornament, reputedly found in Monkstown is also documented (Corlett 2013). A relatively high number of stray finds from this period have been retrieved along the banks of the Dodder and other rivers, which hint at societies that included high-status individuals.

During the Bronze Age, megalithic tombs were no longer constructed with the emphasis moving from a communal approach to burial to a focus on the individual. While evidence of Bronze Age settlement and funerary activity does survive in some areas of south County Dublin, there are no Bronze Age sites in the vicinity of the proposed development area.

Iron Age (800 BC–AD 500)

The Iron Age is a time which was traditionally been perceived as lacking evidence when compared to the preceding Bronze Age and the succeeding early medieval period. However, in recent years, developer-led excavations and projects such as the Late Iron Age and Roman Ireland Project have added significantly to our understanding of the Iron Age. A coastal promontory fort is recorded c. 1km northeast of the proposed development site (DU023-052001). Promontory forts consist of a promontory or spur of land naturally defended on all but one side where artificial defences in the form of earthen banks and fosses or stone walls were erected. While no trace of the promontory fort at Dún Laoghaire survives, it is depicted on Rocque's 1765 map of Dublin. It was destroyed during the construction of the railway in the mid-19 Century and is likely to have dated to the Iron Age period.

Early Medieval Period (AD 500–1100)

The landscape containing the proposed development area was bordered by the sea to the northeast and Wicklow and Dublin Mountains to the southwest and was well settled during the early medieval period. Known as *Cualu* the area was controlled by the *Dal Messin Corb*, a leading Leinster tribe. St. Kevin of Glendalough was a member of this tribe and was also responsible for helping to spread Christianity during the 6th century. During the 8th century, it was under the leadership of the *Ui Briuin* tribe that ruled much of southeast Dublin. They arrived from the north of Kildare, bringing with them the influence of the famous monastery in Kildare, which was devoted to St. Brigid in AD 500. The site of an ancient routeway, the *Slíghe Chualann*, passes near the development area, which connected Tara with *Cualu*. Many of the commonly recorded settlement features of this period, including ringforts, are likely to have been levelled and or removed by development over the last three centuries.

The Vikings arrived in Ireland in the 9th century and founded a settlement in Dublin in AD 917. The development of Dublin as a major centre of trade and industry had implications on the hinterlands to the south, known as *Dyflinarskiri*, extending as far as Greystones. Many Vikings settled in this area and by AD 980, most had converted to Christianity. Place name evidence, archaeological discoveries and the distribution of Rathdown slabs indicate that the area

surrounding Dún Laoghaire was under Viking control or, at least, subject to a strong Scandinavian influence.
Rathdown slabs, named for the fact that they are only found at churches in the Barony of Rathdown, feature a distinctive type of decoration not found elsewhere in Christian Ireland. They are generally regarded as having been influenced by Viking art styles and as representing the burials of local Viking Christians (Corlett 2003). The distribution of Rathdown slabs indicates the extent of Viking settlement in this area. A sheltered berth such as that offered by Dún Laoghaire c. 1.5km to the northeast of the proposed development area, is likely to have been utilised by Viking communities between the Dublin Mountains and the shore of Dublin Bay.

The settlement of Monkstown may have begun with the construction of a church in the early medieval period which was dedicated to St Mochonna, a 6th century saint from Holmpatrick, Skerries. This small church later came under the control of St Mary's Abbey and eventually became a parish church. St. Mary's Abbey had been affiliated early in the 12th century to the Cistercian Order, and in its case, fresh tenants were supplied by the great Cistercian House of Buildwas in Shropshire, under whose disposition it was placed. The site of the church and its associated graveyard (DU023-013002) is located c. 475m southeast of the proposed development area. The remains of this original church are no longer visible; however, a later church was built on the site (DU023-013001).

These monks brought with them new ideas and acquirements. Chief amongst their attainments was knowledge of agriculture. Soon the lands of Carrickbrennan, as well as those round the Abbey on the Liffey, became subject to the plough; a portion was retained in the hands of the monks themselves, and the remainder was let to tenants who, in most cases, were bound to render a certain amount of labour, either in person or by deputy, on the home farm. To their skill in agriculture the new monks joined a knowledge of fishing - an industry which the Cistercian Order, whose lands usually bordered on the sea or rivers, did much to promote, and under their auspices an extensive fishery grew up at Bullock (in nearby Dalkey).

Medieval Period (AD 1100–1600)

The beginning of the medieval period is characterised by political unrest that originated from the death of Brian Borumha in 1014. Diarmait MacMurchadha, deposed King of Leinster, sought the support of mercenaries from England, Wales and Flanders to assist him in his challenge for kingship. Norman involvement in Ireland began in 1169 when Richard de Clare and his followers landed in Wexford to support MacMurchadha. Two years later de Clare (Strongbow) inherited the Kingdom of Leinster and by the end of the 12th century, the Normans had succeeded in conquering much of the country. The initial stage of the invasion of the country is marked by the construction of Motte and Bailey castles.

One of the principal developments during this period was the establishment of numerous religious houses in Dublin. These monastic foundations were granted large landholdings in the hinterland of Dublin with which to generate revenue. These outlying farms were called granges and a number of such establishments were located within c. 3km of Dún Laoghaire, including Monkstown, Kill of the Grange and Deansgrange.

After the Anglo-Norman Conquest, many of the native Irish inhabitants of the lands around Dublin took refuge in the Wicklow Mountains. From there they made unceasing raids on the property of the colonists. The monks soon perceived that their possessions were only to be held by force of arms, and, for their defence, commenced the erection of the Castles of Monkstown (DU023-014001) and Bullock (Dalkey) the former to protect their farm, the latter their fishery. Monkstown Castle lies c. 500m s–utheast of the proposed development area.

It is a National Monument (No. 494) in State Ownership, in addition to a recorded monument and a protected structure (RPS 1042). After the dissolution of the monasteries in the 16th century, the lands at Monkstown were granted to Sir John Travers, Master of the Ordnance of Ireland. The castle was described as 'a fayre castle in repaire' in the terrier of the Down Survey Map of the Parish of Kill and Monckstowne, c. 1655.

Post-Medieval Period (AD 1600–1800)

Prior to the Cromwellian period, there are records of Monkstown having pleasant walks, well-laid gardens, and land stocked with sheep, cattle and horses. St Mochonna's church was restored in 1668 as a protestant church. In 1785, the foundation stone for a new church at Monkstown was laid and was enlarged in 1825 to form the present Church of Ireland in the village. After the Reformation, a new Catholic parish was established in the area and stretched from Seapoint to Little Bray to Three Rock Mountain. Monkstown remained a rural backwater throughout the 18th century up until the development of the harbour at Dunleary in the early years of the 19th century. By this time the area was becoming popular with the city elites who began building summer residences across the sloping fields, in some cases within planned landscapes designed to capture the sea views. The development area can be located on Rocque's 1760 map where it appears as enclosed farmland, with the sharp slope to the Monkstown Stream (running along its original course) well delineated.

The town of Dunleary developed within the confines of the present parish of Monkstown in the area around the Purty Kitchen, and from the early 1800s its population increased and its centre of gravity moved to the present Dún Laoghaire. In 1829 the parish of Kingstown (Dún Laoghaire) was established and included the area of Monkstown (monkstownparish.ie).

It was also during this period (17th century) that a charnel house (DU023-013003) was built, incorporating the structural remains of the medieval church (DU023-013001), c. 500m southeast of the proposed development area.

The 18th century saw a dramatic rise in the establishment of large residential houses around the country. This was largely due to the fact that after the turbulence of the preceding centuries, the success of the Protestant cause and the effective removal of any political opposition, the country was at peace. The large country house was only a small part of the overall estate of a large landowner and provided a base to manage often large areas of land that could be dispersed nationally. During the latter part of the 18th century, the establishment of a parkland context (or demesnes) for large houses was the fashion. Although the creation of a parkland landscape involved working with nature, rather than against it,

considerable constructional effort went into its creation. Earth was moved, field boundaries disappeared, streams were diverted to form lakes and quite often roads were completely diverted to avoid travelling anywhere near the main house or across the estate. Major topographical features like rivers and mountains were desirable features for inclusion in, and as a setting, for the large house and parkland. This was achieved at all scales, from a modest Rectory Glebe to demesne landscapes that covered thousands of acres.

The proposed development area was mostly within the demesne of Richmond Cottage and possibly neighbouring Carrickbrennan Lodge to the immediate west, both found within Monkstown townland. A number of small demesnes were present within the northern extent of the site in Dunleary townland including Purbeck Lodge, Drayton Lodge, Eastern Lodge and Richmond Villa. The development area passes through the demesne of Drayton Lodge specifically, as shown on the first edition Ordnance Survey mapping of 1843.

14.3.2 Summary of Previous Archaeological Fieldwork

A review of the Excavations Bulletin (1970–2022) has revealed that no investigations have been carried out within the proposed development area; however, three investigations have taken place within the surrounding environs, which are summarised below.

Excavations at Martello Tower (DU023-010), c. 420m to the northwest revealed the original stone flooring and foundations of the early 19th century tower but did not discover anything of archaeological significance (Licence No. 03E0228). Archaeological monitoring was carried out on remedial works to the western wall of Carrickbrennan Graveyard (which dates to the 18th/19th century; DU023-013002), c. 445m northeast of the site, but nothing of archaeological significance was identified (Licence No. 10E0173, Bennett 2010:284). Following the discovery of a well at Monkstown Primary School in 2013 monitoring took place, c. 500m to the east of the development area. Nothing of archaeological significance was identified (Licence No. 10E0223).

14.3.3 Cartographic Analysis

William Petty, Down Survey Map, Barony of Rathdown, Parish of Kill and Monckstowne, c. 1655

The Down Survey depicts the proposed development area within the townland and parish of ‘Monckstowne’. The townland is recorded as being owned by Walter Cheevers. The terrier records that there is ‘a fayre castle in repaire and a faire grove of trees with the corn mill in repaire’ within the townland itself. A river runs from the castle (DU023-014001) and a grove of trees, that are situated to the east of the proposed development, to the mill beside the coastline.

John Rocque, An Actual Survey of the County of Dublin, 1760

Rocque’s map depicts the surrounding environs of the proposed development in greater detail than the Down Survey. The proposed development is located to the northwest of Monkstown Castle within open fields with the Monkstown Stream passing through the site from east to west. The tree grove and corn mill are no longer depicted, however, there are several

structures depicted to the north of the castle (DU023-014001). Farmland with a church in ruins is situated to the southwest at a place annotated as 'Kill' (Kill of the Grange).

William Duncan, Map of the County of Dublin, 1821
Duncan's map depicts the proposed development adjacent to the demesne of the house situated to its northwest, though the scale of this map is not exact. The demesne and buildings of Monkstown Court (previously known as Monkstown Lower) are bordered to the north by the demesne of the castle (DU023-014001). The structures in ruins on Taylor's map are identified as a church (DU023-013001).

First Edition Ordnance Survey Map, 1843, scale 1:10,560 (Figure 14.3)
This is the first accurate historic mapping coverage of the area containing the proposed development. The townland boundary between Dunleary and Monkstown divides the site along the trajectory of the Monkstown Stream. A previously stated the site is mostly within the demesne of Richmond Cottage and possibly neighbouring Carrickbrennan Lodge to the immediate west, both found within Monkstown townland. Purbeck Lodge, Drayton Lodge, Eastern Lodge and Richmond Villa and associated demesne are found in Dunleary townland to the north. The development area passes through the demesne of Drayton Lodge specifically. A number of tree lined paths and landscaped gardens make up most of the development area which includes at least four outbuildings.

Ordnance Survey Map, 1912, scale 1:2,500 (Figure 14.4)
Richmond House by the time of this map has changed name it Dalguise and Carrickbrennan Lodge changed to Carrick Brennan to the west of the development area. Drayton Close is now formed which connects to Monkstown Road which depicts the route of a tramway. At least 10 buildings are now found within the site's footprint including a 'Lodge' and a 'Well'. A number of water channels and footbridges are also found throughout the site.

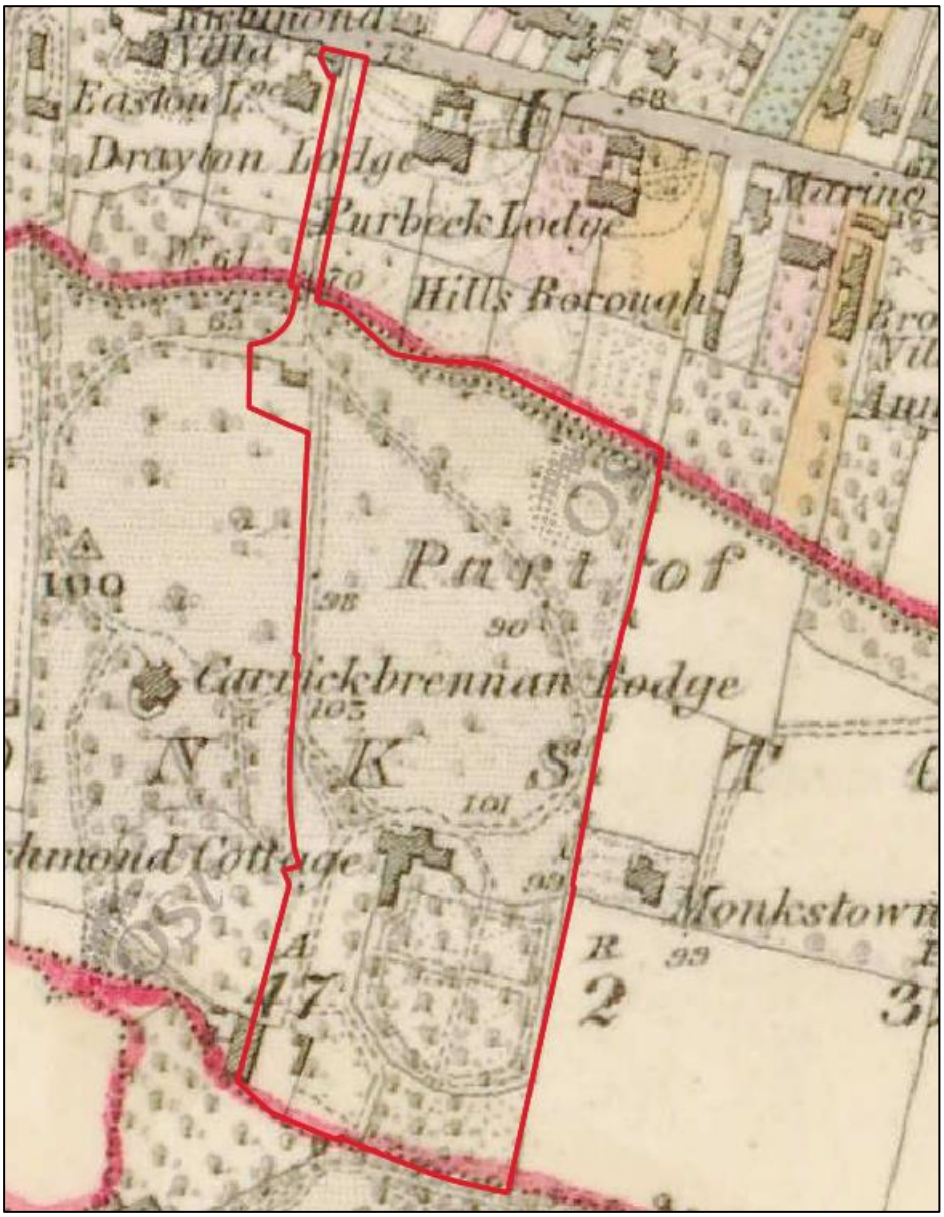

Figure 14.3 Extract from First Edition Ordnance Survey Map (1843) showing the proposed development area

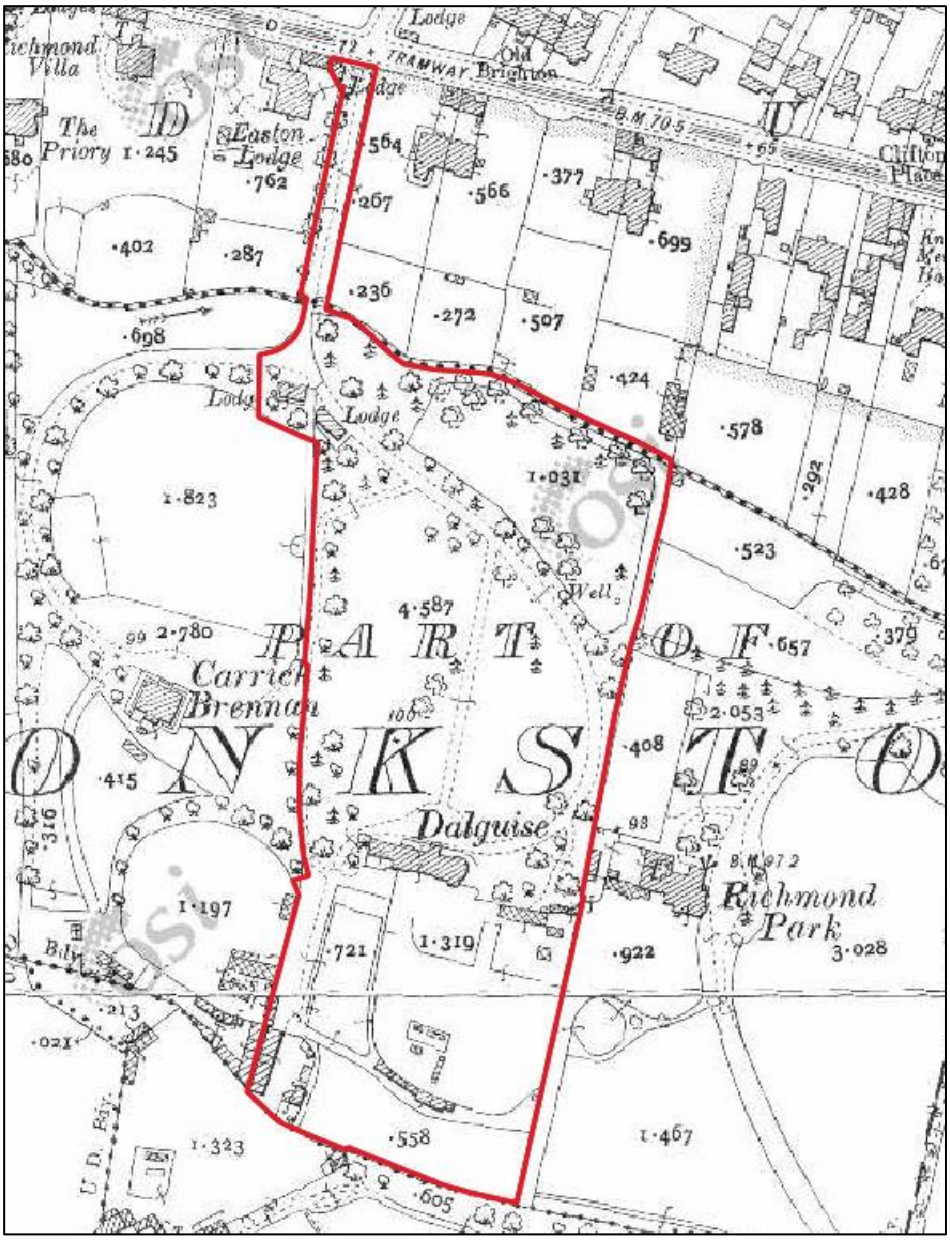

Figure 14.4 Extract from Ordnance Survey Map (1912) showing the proposed development area

14.3.4 County Development Plan

The *Dún Laoghaire-Rathdown County Development Plan 2022-2028* recognises the statutory protection afforded to all Record of Monuments and Places (RMP) sites under the National Monuments Legislation (1930–2014). The development plan lists a number of aims and objectives in relation to archaeological heritage.

There are no archaeological sites located within the development area; however, there are seven recorded monuments within the 500m study area. The nearest of these sites consists

of Martello tower (DU023-010), located c. 420m to the northwest. All seven sites are scheduled for inclusion in the next revision of the RMP (Table 14.1; Figure 14.1).

Monkstown Castle lies c. 500m southeast of the proposed development area. It is a National Monument (No. 494) in State Ownership, in addition to a recorded monument and a Protected Structure (RPS 1042).

Table 14.1 – Recorded Archaeological Sites within the Study Area

RMP No.	Location	Classification	Distance To Scheme
DU023-010	Seapoint or Templehill	Martello tower	c. 420m northwest
DU023-013002	Monkstown Housefarm	Graveyard	c. 476m southwest
DU023-013003	Monkstown Housefarm	Charnel house	c. 477m southwest
DU023-013001	Monkstown Housefarm	Church	c. 480m southwest
DU023-014003	Monkstown Housefarm	Bawn	c. 499m southwest
DU023-014001	Monkstown Housefarm	Castle - tower house	c. 500m southwest
DU023-014002	Monkstown Housefarm	Gatehouse	c. 500m southwest

14.3.5 Topographical Files of The National Museum of Ireland

Information on artefact finds from the study area in County Dublin has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

Museum No	1943:134
Townland	Monkstown Housefarm
Parish	Monkstown
Barony	Rathdown
Find	Iron
Find Place	Castle Park
Description	Iron knife
Reference	NMI Topographical Files

Museum No	1947:36
Townland	Monkstown Housefarm
Parish	Monkstown
Barony	Rathdown
Find	Bronze
Find Place	Castle Park

Description	Bronze bell
Reference	NMI Topographical Files

14.3.6 Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2008–2022) and Bing Maps revealed that the proposed development area remains largely unchanged since 1995. Imaginary from 1995 places the site within the landscape of Dalguise and Drayton Close with Stradbrook Stream running east to west through the development area at Drayton Close and has remained extant to the present day. No previously unrecorded sites of archaeological potential were noted within the proposed development area and Google Earth imagery is shown in Figure 14.5.

14.3.7 Cultural Heritage

The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architectural sites; however, it also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. The archaeological sites discussed above should also be considered cultural heritage and the townlands and placename analysis detailed below are also of cultural heritage significance.

Townlands

The townland is an Irish land unit of considerable longevity as many of the units are likely to represent much earlier land divisions. However, the term townland was not used to denote a unit of land until the Civil Survey of 1654. It bears no relation to the modern word 'town' but like the Irish word, baile refers to a place. It is possible that the word is derived from the Old English *tun land* and meant 'the land forming an estate or manor' (Culleton 1999, 174). The proposed development area is within two townlands.

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bogs are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century, when land documentation records begin. Many of the townlands are mapped within the Down Survey of the 1650s, so called as all measurements were carefully 'laid downe' on paper at a scale of forty perches to one inch. Therefore, most are in the context of pre-17th century landscape organisation (McErlean 1983, 315).

In the 19th century, some demesnes, deer parks or large farms were given townland status during the Ordnance Survey and some imprecise townland boundaries in areas such as bogs or lakes were given more precise definitions (ibid.). Larger tracks of land were divided into a number of townlands, and named Upper, Middle or Lower, as well as Beg and More (small and large) and north, east, south, and west (Culleton 1999, 179). By the time the first Ordnance Survey had been completed a total of 62,000 townlands were recorded in Ireland.

The proposed development area is located within the townlands of Dunleary and Monkstown. These two townlands are located within the parish of Monkstown and barony of Rathdown, County Dublin. The townland boundary between Dunleary and Monkstown divides the site along the trajectory of the Monkstown Stream and constitutes a cultural heritage feature.

Place Name Analysis

Townland and topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They also provide information on the history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830s and 1840s when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and www.logainm.ie.

A description and a possible explanation of each townland name in the environs of the proposed development area are provided in Table 14.2.

Table 14.2 – Placename Analysis

Name	Derivation	Possible Meaning
Dunleary	*Dún Laoghaire*	Fort of Laoghaire
Monkstown	*Baile na Manach*	Town of the monks
Mountashton	-	Ashtons Hill
Stradbrook	*Sráid an tSrutháin*	Street near a stream

14.3.8 Field Inspection

The field inspection sought to assess the site, its previous and current land use, the topography and any additional information relevant to the report. During the course of the field investigation the proposed development area and its surrounding environs were inspected and the results are discussed below by area as shown on Figure 4.5.

Area 01
Area 01 comprises the southernmost portion of the proposed development, beyond the formal gardens and orchards.

The southern boundary of the site is demarcated by the demesne wall which also forms the townland boundary between Monkstown and Mountashton. The lower part of the wall is constructed of irregular stone blocks whilst the upper half comprises a more recent concrete block extension (Plate 14.1). A range of outbuildings visible on the 1912 OS mapping remain extant, though in a dilapidated and overgrown state, along with the coach house (first visible on first edition OS map of 1843) at the southwestern corner of the site (Plates 14.2 and 14.3). The remainder of this area is largely covered by mature trees. The wall along the western boundary of the proposed development, similar to that at the southern boundary, shows at least two phases of construction, the lower part being stone-built, the upper brick-built.

Figure 14.5 Field inspection areas

Plate 14.1 Southern wall, facing south

Plate 14.2 Outbuildings, facing northeast

Plate 14.3 Coach house, facing southwest

Area 02

Area 02 comprises the walled orchards and garden to the south of the formal gardens and greenhouses immediately to the rear of the main house.

The walled orchard forming the eastern two thirds of this area are divided by a north-south avenue of apple trees, now slightly overgrown (Plate 14.4). The enclosing wall is brick-built, curving from east-west to north-south at the southwestern corner. West of the orchards is a walled garden, overgrown and, as the orchards, devoid of visible features (Plate 14.5). The garden is bounded at the northern end by modern garage buildings.

Plate 14.4 Avenue, facing north

Plate 14.5 Garden, facing north

Area 03

Area 03 comprises the buildings of Dalguise House itself, the gardens immediately to the rear (south) of the house and the greenhouses and outbuildings within them.

The house and outbuildings largely conform to the layout depicted on the 1912 OS mapping, although a poolhouse has been constructed between the house and closest greenhouse during the late 20th/early 21st century. The house also broadly matches the configuration shown on the first edition OS mapping, although without an extension to the south in the area of the present-day garage buildings. A short section of wall between these garges and the house with an archway giving access to the gardens may be a remnant of this southern wing (Plate 14.6). The house is in reasonable condition structurally (Plate 14.7).

Three greenhouses, all visible on the 1912 mapping, are still extant at the eastern end of the garden, in varying states of preservation (Plate 14.8). A small, probable early 20th century potting shed is also present against the eastern boundary wall in this area. The boundary wall itself is brick-built on a stone foundation and forms the eastern boundary of the proposed development.

Plate 14.6 Archway, facing east

Plate 14.7 Front of Dalguise House, facing south

Plate 14.8 Greenhouses, facing northwest

Area 04
Area 04 comprises the parkland and curving driveway to the front (north) of the main house.

The parkland remains much as it is depicted on the 1912 OS mapping, with scattered mature trees and open grassed areas, divided by a central north-south cobbed pathway and iron railings (Plates 14.9-10). The only more recent addition is a tennis court at the western side and, presumably, resurfacing of the driveway which curves around the northern and eastern sides of the park.

Plate 14.9 Northeast quadrant of park, facing northeast

Plate 14.10 Pathway and railings, facing north

Area 05
Area 05 comprises the area of land northeast of the driveway.

The land is screened from the remainder of the parkland by mature trees lining the driveway and slopes downwards from south to north. The area appears to be a part of the parkland as depicted on the 1912 OS map, although is less manicured than that on the western side of the driveway (Plate 14.11). A well is marked in this area on the 1912 map, but no upstanding remains were identified during the site inspection, indicating that it has been covered over and buried.

Plate 14.11 Land northeast of drive, facing east

Area 06

Area 06 comprises the two lodge buildings at the northwestern corner of the main section of the proposed development and their immediate surroundings.

The western lodge (Plate 14.12) is visible on the first edition OS mapping, the eastern (Plate 14.13) on the 1912 OS map, both well preserved and in the case of the western at least, still occupied. The curving wall forming the western boundary of the proposed development at this point is brick-built and may have been rebuilt relatively recently by comparison to the boundary walls elsewhere on the site.

Plate 14.12 Western lodge, facing south

Plate 14.13 Eastern lodge, facing south

Area 07

Area 07 comprises the straight, northernmost section of the driveway, leading from Monkstown Road to the lodges in Area 06. At its southern end the driveway is carried over the stream which forms the townland boundary between Monkstown and Dunleary by a short bridge with low stone-built parapets (Plate 14.14).

Along the tree lined driveway itself two cast iron lampposts were identified on the western side (Plate 14.15). At the northern extreme, on Monkstown Road, the gateway is formed of two stone pillars supporting ornate wrought iron gates. The eastern pillar `bears the name 'Dalguise'. To the west of the gates a building occupies the site of a lodge marked on the 1912 OS map. A similar building is also shown on the first edition map, although it is not marked as a lodge. The current building is smaller than either shown on the historic OS mapping, although may incorporate elements of the earlier structure.

Plate 14.14 Bridge over townland boundary,

Plate 14.15 Lampost on drive (1 of 2), facing west facing southeast

General

The demesne landscape within the proposed development area remains largely as depicted on the 1912 OS mapping, including the majority of the architectural elements, in varying degrees of preservation. Whilst no previously unknown features of archaeological significance were identified during the inspection, large areas of the proposed development appear relatively undisturbed, particularly the greenspaces within the parkland.

14.4 Conclusions

This assessment has been undertaken in order to assess the potential for the survival of archaeological and cultural heritage features in advance of a proposed residential development at Dalguise House, Monkstown, County Dublin. There are no archaeological sites located within the development area; however, there are seven recorded monuments within the 500m study area, The nearest of these sites consists of Martello tower (DU023-010), located c. 420m to the northwest.

The proposed development area lies within an extensive curtilage to the south of Monkstown Road and is surrounded by modern developments. The Stradbrook Stream (sometimes referred to as the Monkstown Stream), flows east-west through the development area at Drayton Close and abuts the northern extent of the Dalguise lands. The townland boundary between both Dunleary and Monkstown extends partially through the proposed development area and can be considered as possessing cultural heritage and archaeological potential. The demesne landscape associated with Dalguise House also possesses cultural heritage signficance, being a post medieval designed landscape. The specific built heritage elements of the proposed development area and the designed landscape, are detailed and assessed in Chapter 15 Architectural Heritage.

A review of the Excavations Bulletin (1970–2022) has revealed that no investigations have been carried out within the proposed development area, although three investigations have

taken place within the surrounding environs. All three investigations at Martello Tower, Carrickbrennan Graveyard and Monkstown Primary School failed to identify any features of archaeological significance.

Analysis of cartographic sources has revealed that the proposed development area itself has remained relatively unchanged from the post-medieval to modern periods. Historically the site is placed within the townland and parish of 'Monckstowne'. The site is located to the northwest of Monkstown Castle within open fields, with the Monkstown Stream passing through the site from east to west. The townland boundary between Dunleary and Monkstown divides the site along the trajectory of the Monkstown Stream. The site is mostly within the demesne of Richmond Cottage (Dalguise) and possibly a small part of the neighbouring Carrickbrennan Lodge to the immediate west. The development area passes through the demesne of Drayton Lodge specifically.

Analysis of aerial photographic record available for the area failed to identify any previously unknown archaeological features in the area. The site has remained within the landscape of Dalguise and Drayton Close with Stradbrook Stream running east to west through the development area. A field inspection has been carried out as part of the assessment which established that the demesne landscape depicted on the 1912 OS mapping survives largely intact, including the majority of the structural features, in varying degrees of preservation. No previously unknown features of archaeological potential were identified, with the exception of the general archaeological potential assigned to watercourses.

14.5 Potential Impacts of the Proposed Project

14.5.1 Construction Phase

14.5.1.1 Archaeological Heritage

There are no predicted impacts on any known archaeological remains or recorded monuments during the construction of the proposed development. It is possible that ground disturbances associated with the development, prior to the implementation of mitigation, may directly and negatively impact archaeological features or deposits that have the potential to survive beneath the current ground level, without surface expression. Dependent on the nature, extent and significance of any such remains, impacts may be moderate to very significant in significance.

The townland boundary between Dunleary and Monkstown follows the trajectory of the Stradbrook Stream, which will be crossed by a new entrance and bridge into the proposed development area. Ground disturbances within the stream channel, prior to the implementation of mitigation, may result in direct, negative impacts upon buried archaeological remains or artefacts. Dependent on the nature, extent and significance of any such remains, impacts may be moderate to very significant in significance.

14.5.1.2 Cultural Heritage

No construction impacts are predicted upon specific cultural heritage sites or areas.

14.5.2 Operational Phase

14.5.2.1 Archaeological Heritage

There are no predicted operational impacts upon the archaeological heritage resource.

14.5.2.2 Cultural Heritage

There are no predicted operation impacts upon the cultural heritage resource.

14.6 Mitigation Measures

14.6.1 Construction Phase

14.6.1.1 Archaeological Heritage

CH_1: All topsoil stripping associated with the proposed development will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

CH_2: Prior to the commencement of construction, an underwater wade survey will be carried out on the section of the stream to be affected by the construction of a new access bridge. This will be carried out under licence to the DoHLGH. Dependent on the results of the assessment, further mitigation may be required such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

14.6.1.2 Cultural Heritage

No mitigation is required.

14.6.2 Operational Phase

14.6.2.1 Archaeological Heritage

No mitigation is required.

14.6.2.2 Cultural Heritage

No mitigation is required.

14.7 Residual Impacts

14.7.1 Archaeological Heritage

There are no predicted residual impacts upon the archaeological heritage resource.

14.7.2 Cultural Heritage

There are no predicted residual impacts upon the cultural heritage resource.

14.8 Monitoring

The mitigation measures detailed above would also function as a monitoring system to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

14.9 Reinstatement

The proposed development does not include a decommissioning or reinstatement phase. Therefore, reinstatement is not applicable to this assessment.

14.10 Interactions

Due to the nature of the archaeological and cultural heritage resource, the contents and results of the architectural heritage assessment, as laid out in Chapter 15, has been fully reviewed as part of this assessment. This has been carried out in order to prevent replication of information and ensure historical information presented is consistent.

14.11 Cumulative Impacts

No cumulative impacts (from surrounding permitted or proposed developments) are predicted upon the archaeological or cultural heritage resource during the construction or operational phase. Any archaeological remains within the site will be preserved in-situ or by record and the townland boundary will be incorporated into the development.

14.12 'Do-Nothing' Effect

If the proposed development were not to proceed there would be no negative impact on the archaeological or cultural heritage resource of the proposed development area.

14.13 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered during the compilation of this chapter.

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monkstownparish.ie – History of Monkstown Parish

15.0 ARCHITECTURAL HERITAGE

15.1 Introduction

15.1.1 Architectural Heritage

This chapter of the Environmental Impact Assessment Report has been prepared by Ciarán Mullarkey & Karl Pedersen of Mullarkey Pedersen Architects. Mullarkey Pedersen Architects are RIAI Accredited Grade I Conservation Architects and have prepared this Chapter as part of an EIAR submission for a proposed residential development on lands at Dalguise House, Monkstown Road, Blackrock, Co Dublin. Dalguise is listed in the Dún Laoghaire–Rathdown Record of Protected Structures, RPS No 870, where it is described as 'House' with the address, Clifton Lane, Monkstown, Blackrock, Co. Dublin. This chapter has been prepared following inspection of the site and surrounding urban context; architectural and historical research, including development chronologies; assessment of design proposal for the site.

15.1.2 Definitions

Architectural Heritage is a term that refers to buildings or structures of historical or cultural importance, which are a vital part of the country's heritage and require conservation.

15.1.3 Significance of Effects

Impact definitions (description of effects) are as per Environmental Protection Agency (EPA) Guidelines (2022):

- **Imperceptible:** An effect capable of measurement but without significant consequences
- **Not significant:** An effect which causes noticeable changes in the character of the environment but without significant consequences
- **Slight:** An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
- **Moderate:** An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
- **Significant:** An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
- **Very Significant:** An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
- **Profound:** An effect that obliterates sensitive characteristics.

15.1.4 Consultations

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage (DoHLGH) – the Heritage Service, National Monuments: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database and Preservation Orders;
- Dublin City Heritage Plan
- Architectural Heritage Protection, Guidelines for Planning Authorities 2011
- Dún Laoghaire-Rathdown County Council: Planning Section
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps.

15.1.5 Guidance and Legislation

The following legislation, standards and guidelines were consulted as part of the assessment:

- National Monuments Act, 1930 to 2014;
- The Planning and Development Acts, 2000 (as amended);
- Heritage Act, 1995 (as amended);
- Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2022, EPA;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Report, 2022, EPA;
- Architectural Heritage Protection, Guidelines for Planning Authorities 2011
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands;

15.2 Methodology

15.2.1 Paper Survey

- Record of Monuments and Places for County Dublin;
- Sites and Monuments Record for County Dublin;
- National Monuments in State Care Database;
- Preservation Orders List;
- Preservation Orders List;
- National Inventory of Architectural Heritage;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Dún Laoghaire-Rathdown County Development Plan 2022-2028
- Aerial photographs.

15.2.2 Field Inspection

Field inspection was carried out on 8th March 2022. Inspection involved detailed recording of site condition by means of text notes, photographs and fabric condition assessment. Output of field inspection is set out below.

15.2.3 Architectural Heritage

This section describes the methodology used to assess the likely effects of the Development on the heritage value of the Site and its surroundings. Environmental Impact Assessment guidance as listed below have been used to guide the assessment process. The assessment of impact on the setting of the Protected Structure is structured on the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports prepared by the Environmental Protection Agency (May 2022), and Directive 2011/92/EU (as amended by Directive 2014/52/EU) on the assessment of the likely effects on the environment. The list of definitions given below is taken from Table 3.4: In addition, development is subject to international commitments given under the International Council on Monuments & Sites (ICOMOS) Charters (Venice & Burra) and other international guidance. Research for this report comprised a paper survey of all available architectural, historical and cartographic sources. The second phase involved a field inspection of the site. Research sources are as follows:

- Record of Monuments and Places for County Dublin
- Sites and Monuments Record for County Dublin
- National Monuments in State Care Database
- National Inventory of Architectural Heritage
- Topographical files of the National Museum of Ireland
- Cartographic and documentary sources relating to the study area
- Dun Laoghaire Rathdown County Development Plan 2022–2028
- Related Register of Protected Structures

Field inspection involved an extensive inspection and recording of existing historic site & building fabric.

(i) Identifying the Heritage Assets to be Assessed

Heritage assets are physical places that have Evidential, Historical, Aesthetic or Communal value, and which will be subject to change as a result of the Development, with reference to the Historic England publication 'Conservation Principles, Policies and Guidance':

- ***EVIDENTIAL VALUE*** derives from the potential of a place for evidence about past human activity.
- ***HISTORICAL VALUE*** derives from the ways in which past people, events and aspects of life can be connected through a place to the present.
- ***AESTHETIC VALUE*** derives from the ways in which people draw sensory and intellectual stimulation from a place.
- ***COMMUNAL VALUE*** derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

EIA guidance recognises "material assets, cultural heritage and the landscape" as an environmental resource and the assessment therefore encompasses all of these whether they are designated as Protected Structures

or otherwise. Where prior designations of value exist (e.g. the Register of Protected Structures, the National Inventory of Architectural Heritage) these are given cognisance in the assessment. Where such designations do not currently exist, value judgements have been determined by new survey work and analysis.

(ii) Establishing Sensitivity to Change

Assessing the heritage asset includes the following:

i. The asset is listed in the Record of Protected Structures - RPS No 870
ii. The north of the site & Gatehouse sits partly in Monkstown Architectural Conservation Area.
iii. The house's gardens & related buildings represent curtilage as outlined in DHLGH 'Architectural Heritage Protection Guidelines for Planning Authorities' (2011) which provide specific guidance (e.g. on the curtilage of a Protected Structure).
iv. The DHLGH Guidelines state the curtilage of a protected structure should be determined as follows;
"In making a decision as to the extent of the curtilage of a protected structure and the other structures within the curtilage, the planning authority should consider:
Is, or was, there a functional connection between the structures?
Was there a historical relationship between the main structure and the structure(s) within the curtilage which may no longer be obvious? In many cases, the planning authority will need to consult historic maps and other documents to ascertain this;
Are the structures in the same ownership? Were they previously in the same ownership, for example, at the time of construction of one or other of the structures?"

(iii) Establishing the Significance of the Effects of Change

Table 3.4 of the EIAR Guidelines 2022 categorises the Significance of the Effects as follows;

- Imperceptible
- Not Significant
- Slight Effects
- Moderate Effects
- Significant Effects
- Very Significant
- Profound

We note that in the recent case of Holland J in Monkstown Roads Residents' Association & Ors v An Bord Pleanala & Ors [2022] IEHC 318 it was noted that case law holds that "significant effects" encompasses both positive and negative effects. Logically then all of the above categories can be qualified as being 'positive', 'neutral' or 'negative'.

For the purposes of comparative assessment, the Degree of Change are classified as 'Low', 'Medium' or 'High'.

(iv) Mitigation & Residual Effects

The design of the Development has been undertaken with consideration on how the impacts to Heritage assets can be minimised. Mitigation measures are therefore 'designed-in' to the process.

Mitigation measures are defined for each adverse effect and the residual effect, once those measures have been effected, is assessed.

(v) Probability and Frequency of Effects

Change to the historic site overwhelmingly arises from changes to built structures and designed landscapes. For the purposes of assessment the identified effects, inclusive of mitigation measures, are considered to be certain to occur.

15.3 Baseline Environment

15.3.1 Cartographic Analysis

In order to establish an understanding of the baseline physical and cultural conditions of the Site as existing, a range of activities have been undertaken by Mullarkey Pedersen Architects. These have included:

- Desktop-based research;
- Research of historic archives
- Site surveys of the open grounds within the site

These activities have informed:

- Understanding of the characteristics of the site; landscape, principal structures, landscape features, access, surrounding context, views into and out of the Site.
- Understanding of the historical development of the site, the impetus for its creation.
- Understanding of the location, significance and sensitivity to change of the Protected Structures and other buildings within and without the Site.
- Understanding of Site allows for informed assessment of the heritage factors which are impacted by the Development, the specific effects of the Development on those heritage factors, possible alternatives, and mitigation/compensation measures which may be put in place.
-

The output of this analysis is listed below;

(i) Historic Mapping

A cartographic analysis has been carried out to assist in our understanding of how the development of the site has changed through time.

Taylor's early-19th Century map shows that the Monkstown area is still mainly rural although already there are a considerable number of large houses in the area.

Figure 15.1: Taylor Map 1816.

Figure 15.2: 1st Edition OS Map, 1847.

Dalguise House appears on the 1st Edition Ordnance map of 1837, where it is named Richmond Cottage. On that map the footprint of the main body of the house appears similar to the present footprint of the main house, but the 1837 map shows a large south western extension or wing that no longer exists. The curved outline of the large walled garden appears on the 1837 map as do the stable yard and some of the present stable buildings. There is a gate lodge shown at the shared entrance to Dalguise and Carrick Brennan from Monkstown Road, but this does not have the same footprint as the present gate lodge at that location. Interestingly Richmond Cottage appears to have been paired with the adjacent Carrickbrennan Lodge, the two linked by a large oval landscaped lawn circumscribed and bisected by carriageways.

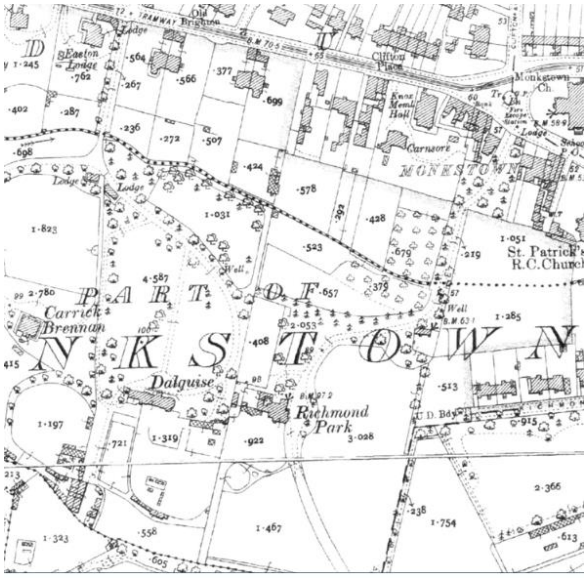


Figure 15.3: Revised Edition OS Map, 1907-8

On the 25 inch 1907 Ordnance map the house has been renamed as Dalguise. The present three storey western extension is on the 1907 map, but the earlier southern wing at the west end of the house is gone. The footprint of the gate lodge at Monkstown Road appears to be similar to that of the present gate lodge at that location. At the south end of the lane, the 1907 map shows two further gate lodges, one each for Dalguise and Carrick Brennan, strongly suggesting that the gate lodge at the Monkstown Road end of the lane was intended to serve both houses. The pairing with Carrickbrennan and the related landscaped oval are still retained.

15.3.2 County Development Plan

Policy Objective HER8 of the *Dun Laoghaire-Rathdown Development Plan 2022-2028*, states that it is Council Policy to:

i. Protect structures included on the RPS from any works that would negatively impact their special character and appearance.
ii. Ensure that any development proposals to Protected Structures, their curtilage and setting shall have regard to the 'Architectural Heritage Protection Guidelines for Planning Authorities' published by the Department of the Arts, Heritage and the Gaeltacht.
iii. Ensure that all works are carried out under supervision of a qualified professional with specialised conservation expertise.
iv. Ensure that any development, modification, alteration, or extension affecting a Protected Structure and/or its setting is sensitively sited and designed, and is appropriate in terms of the proposed scale, mass, height, density, layout, and materials.
v. Ensure that the form and structural integrity of the Protected Structure is retained in any redevelopment and that the relationship between the Protected Structure and any complex of adjoining buildings, designed landscape features, or views and vistas from within the grounds of the structure are respected.
vi. Respect the special interest of the interior, including its plan form, hierarchy of spaces, architectural detail, fixtures and fittings and materials.

vii. Ensure that new and adapted uses are compatible with the character and special interest of the Protected Structure.
viii. Protect the curtilage of protected structures and to refuse planning permission for inappropriate development within the curtilage and attendant grounds that would adversely impact on the special character of the Protected Structure.
ix. Protect and retain important elements of built heritage including historic gardens, stone walls, entrance gates and piers and any other associated curtilage features.
x. Ensure historic landscapes and gardens associated with Protected Structures are protected from inappropriate development (consistent with NPO 17 of the NPF and RPO 9.30 of the RSES).

Architectural Conservation Areas

Policy Objective HER13 of the Dun Laoghaire-Rathdown Development Plan 2022-2028, includes objectives to:

i. Protect the character and special interest of an area which has been designated as an Architectural Conservation Area (ACA). Please refer to Appendix 4 for a full list of ACAs.
ii. Ensure that all development proposals within an ACA be appropriate to the character of the area having regard to the Character Appraisals for each area.
iii. Ensure that any new development or alteration of a building within an ACA or immediately adjoining an ACA is appropriate in terms of the proposed design, including scale, height, mass, density, building lines and materials.
iv. Seek a high quality, sensitive design for any new development(s) that are complementary and/or sympathetic to their context and scale whilst simultaneously encouraging contemporary design which is in harmony with the area. Direction can also be taken from using traditional forms that are then expressed in a contemporary manner rather than a replica of a historic building style.
v. Ensure street furniture is kept to a minimum, is of good design and any redundant street furniture removed. vi. Seek the retention of all features that contribute to the character of an ACA including boundary walls, railings, soft landscaping, traditional paving and street furniture.

Monkstown Architectural Conservation Area

Much of Monkstown lies within the Monkstown Architectural Conservation Area (ACA). The subject site does not lie within the ACA, with exception of short section of the entrance driveway and Dalguise Lodge/Entrance Lodge. The Monkstown ACA (July 2012) document sets out 9 Character Areas. The main body of the lands of Dalguise lie south of Character Area 3: Monkstown Road. The north end of the lane leading to Dalguise, Clifton Lane, lies within that Character Area. Character Area 3 is described in the July 2012 Document as follows:

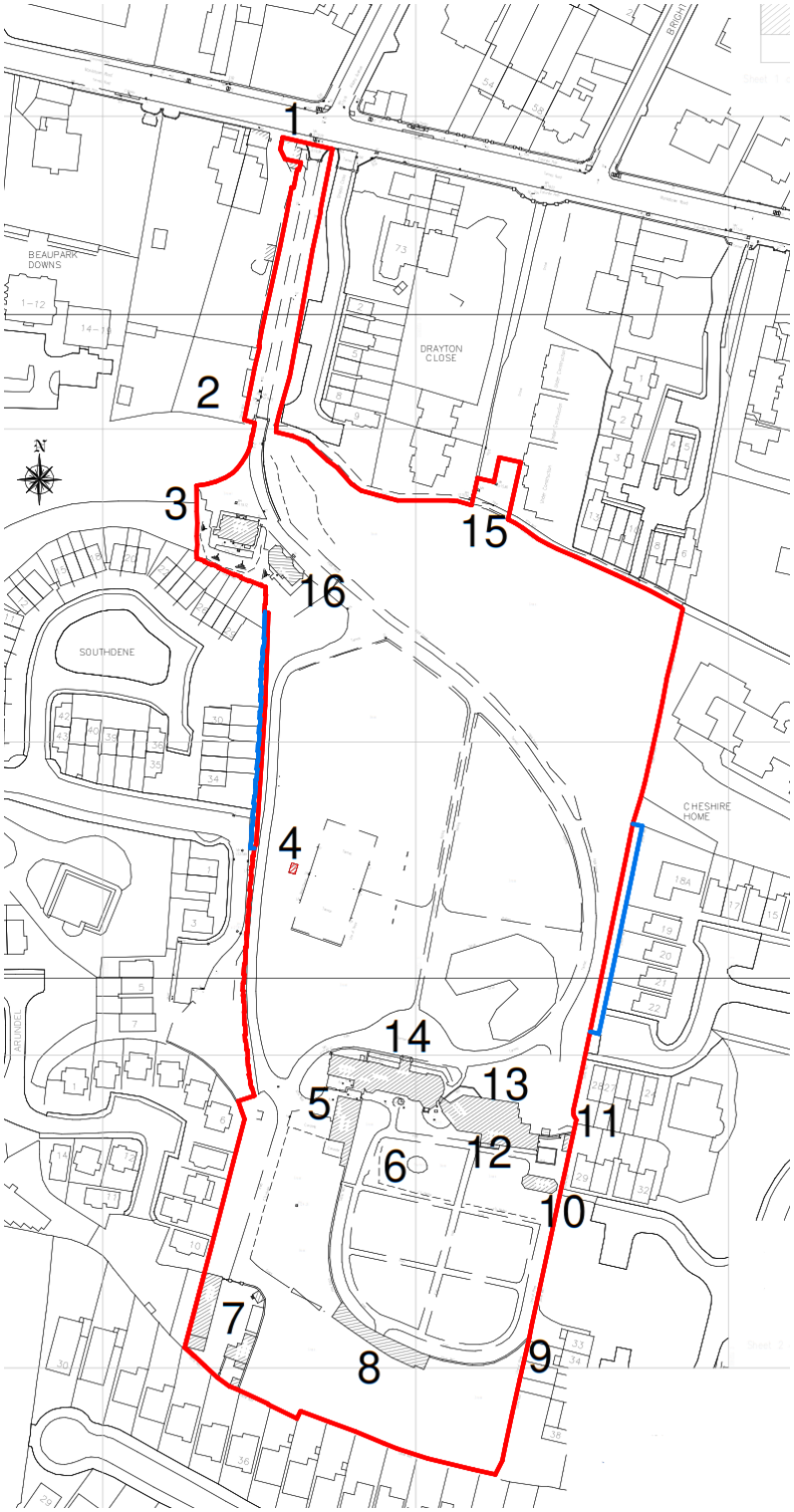
The architecture in this area is typically late Georgian, early-Victorian with pitched slated roofs and painted plain rendered external walls. External detailing is generally modest and lacking the classical motifs and colour of later periods. Significantly the buildings do not address the sea unlike the terraces and hence their inclusion as a separate character area…
Of interest are a cluster of dwellings at the south east end of the road, that are probably contemporary with the Crescent, that display features that suggest they constitute some of the earliest constructions on this road.They include Hillsborough, Marino Lodge and Elm Lodge
Other houses of note on the south side of the Monkstown Road include Drayton Lodge/Glenville, Purbec Lodge/Heathfield and Easton Lodge/Beechfield six large dwellings unusually built in pairs back to back. Next along are two larger detached houses, Shanahan (formerly Richmond Villa) and The Priory. Further along are the semi-detached Hilton Lodge and Belmont".

15.3.3 Contemporary Aerial Photograph

This image shows how the area has been completely transformed in the last fifty years with the development of low density suburban residential development. Most of the historic single large houses and associated gardens have been developed for housing, following normal development trends and this is one of the last sites to be developed in the area. The linkage with Carrickbrennan House has been severed. The western half of the defining landscaped oval has disappeared under a suburban cul-de-sac, leaving the eastern half to the north of Dalguise House somewhat bereft.

Figure 15.4: Contemporary Satellite View.

15.3.4 Contemporary Site Survey



KEY

1. *Dalguise Lodge/Entrance Lodge*
2. *Modern entrance gates*
3. *Modern detached house*
4. *Tennis court & garden paths*
5. *Modern Garage*
6. *Garden paths*
7. *Stables*
8. *Garden Sheds*
9. *Wall to Walled Garden*
10. *Modern Glass house*
11. *Potting Shed*
12. *Vinery*
13. *Swimming Pool*
14. *Dalguise House*
15. *Potential site access point*
16. *Gate Lodge/Brick Lodge*

Fig. 15.5: The site survey above provides a graphic representation of the site condition as described in the satellite photograph above.

15.3.4 Architectural Heritage

Historical Value

Dalguise House represents part of the transition from an overwhelmingly agrarian 18th century economy to a 19th century economy more closely associated with speculative capital development. This wave of development was initiated by the transfer of ownership of most of the Monkstown lands into the Pakenham and De Vesey families. The asset value of the lands was then appreciated by the new owners, as they set about subdividing the land for housing development. Monkstown became a fashionable suburb of Dublin, a pleasant place by the sea and an obvious target for those wealthy merchants who aspired to the grandeur of such a picturesque setting. This dynamic was greatly enhanced by the opening of the rail link with Dublin in 1834.

As is evidenced on the cartographic survey the house was built sometime between 1816 and 1837 at a time when this part of south county Dublin saw an influx of many of the city's successful bourgeoisie aspiring to a country lifestyle yet within easy access to the source of their wealth, Dublin itself. Thus the house meets the definition of a villa, which although located in the country is closely related economically and culturally with the city.

Dalguise was one of a number of houses, which were built on individual plots on either side of Monkstown Road built in the earlier decades of the 19th century. Typically these houses had modest external detailing and do not address the sea unlike the later terraces. The 1st Edition OS map identifies the house as 'Richmond Cottage' strongly suggesting that it may originally have been a villa, a distinctive typology in Irish Architectural History, namely a country house with a defining relationship with the city, functioning as a retreat from the city but nonetheless very much part of it.

The site later became subsumed within the massive wave of suburban development so typical of more recent Irish urban history.

Aesthetic Value

Fig.15.6: 1816 Map (L), 1837 Map (M), 1907 Map (R)

As noted above the house was originally called Richmond Cottage which suggests that it may have been a villa, with one main floor over a semi-basement. The 19th century maps show that the house was linked spatially with Carrickbrennan House to the west by a large landscaped oval. The eastern half of this oval is retained at Dalguise in the form of the graceful approach road. The cottage is a relatively common typology in the area. That the house originated as a more modest villa helps explain some of the peculiarities of the present house, with its narrow elongated plan, poorly integrated levels and elevational incoherence. The basement & ground floor plans suggest a simple tripartite plan typical of the villa typology. This arrangement does not extend to the first floor implying that this floor is a later addition. This implication is reinforced by the unusually large gap between the top of the ground floor windows and the sills of the first floor windows, again suggesting that a floor was added to a villa that had a tall main floor. Internally the architectural style and detailing of the main staircase are late 19th century, another indication that the top floor was added at that time. It has not been possible to identify the architect of the original villa, but the addition of the main stairs coincides with the involvement of the successful architectural firm of McCurdy and Mitchell in the development of a number of ancillary buildings on the site (greenhouse, stables and lodge). It is unlikely that such a successful firm would have concerned itself solely with these relatively insignificant buildings and it is likely that the addition of the upper floor, pedimented wings and western servant wing were built to this firm's design. There are a number of Jugendstil motifs in the interior décor suggesting that some further renovation was carried out in the early 20th century. Further modernisations have been carried out throughout the 20th century.

15.3.5 Conclusions

As outlined above, the original Richmond Cottage villa has been subject to considerable expansion in the latter part of the 19th century. This expansion involved the addition of wings, a servants' wing and an additional floor. The integration of the new into the existing building was not executed with particular skill, resulting in a house which is compromised externally and internally, both aesthetically and functionally. The significance of the landscape of the grounds lies in the retention of the eastern half of a large oval lawn, described by the entrance route, which linked Dalguise House an adjacent house to the west. The site is also notable in that it has remained undeveloped to this day.

15.3.6 Field Inspection

Current Condition

Entering the Dalguise House's demesne off the Monkstown Road, the visitor is struck by the transformation from relatively dense suburbia to an Arcadian setting. The house sits approximately in the middle of a rectangle of grounds bounded on all sides by a belt of woodland which very effectively isolates it from surrounding suburbia. A wide single lane estate road runs directly south from the gatehouse on Monkstown Road to a modern detached house, veers east past a brick cottage and then swings around the east side of a large lawn, until it reaches the front entrance of Dalguise House. The road then continues around the west end of the house, finishing at the historic stable yard in the south west corner

of the site. There is a walled garden immediately south of the house with a number of small, derelict outhouses attached to its southern end. Directly to the east of Dalguise House are a number of ancillary buildings of differing ages, including two glass houses and a modern swimming pool enclosure.

Setting

Dalguise House faces north over a tarmaced forecourt to a lawn bounded by mature trees. A footpath runs north from the forecourt in the axis of the house, but the garden does not correspond to the primary symmetry of the entrance façade. This non alignment is due to the fact that the original entrance lawn was conceived as a large oval which paired the house with an adjacent property to the west. Tree planting is not regular and there is a tennis court at an angle to one side surrounded by a wall of conifers. The view south from the house is over an informal garden and then a grass paddock to the left and a walled garden to the right. The walled garden is defined by a long curved brick wall running round from the west side to the south side. The walled garden is partly concealed from the house by a broad and tall bank of shrubs along the north side of the walled garden. There are a number of single storey ancillary structures to the east of the house, including a swimming pool and various garden related structures. There are a number of semi derelict structures built up against the south side of the walled garden and a stable enclosure in the south west corner. The whole site is girded by a belt of mature trees, augmented by thick hedges, which very effectively isolate the site from the surrounding suburban housing.

Fig.15.7: View front house looking north (L), view of walled garden (R)

Development of Dalguise House

Historian Laura Johnstone notes that in the eighteenth century, many villas in coastal villages and settlements on the outskirts of Dublin were non-permanent summer retreats, but by the early nineteenth it became fashionable to live permanently in these resort landscapes. The emerging professional and upper-middle classes retreated to these emerging suburbs to escape the overcrowded unsanitary conditions of the declining city centre. This development created something neither city nor country, but rather in-between, a new suburban landscape in which dwelling and leisure were combined. Dalguise was one of a number of such houses, built on individual plots on either side of Monkstown Road in the earlier decades of the 19th

century. Typically these houses had modest external detailing and do not address the sea, unlike the later terraces. The 1st Edition OS map identifies the house as 'Richmond Cottage' strongly suggesting that it may originally have been a villa, a distinctive typology in Irish Architectural History, namely a country house with a defining relationship with the city, functioning as a retreat from the city but nonetheless very much part of it. The site later became subsumed within the massive wave of suburban development so typical of more recent Irish urban history.

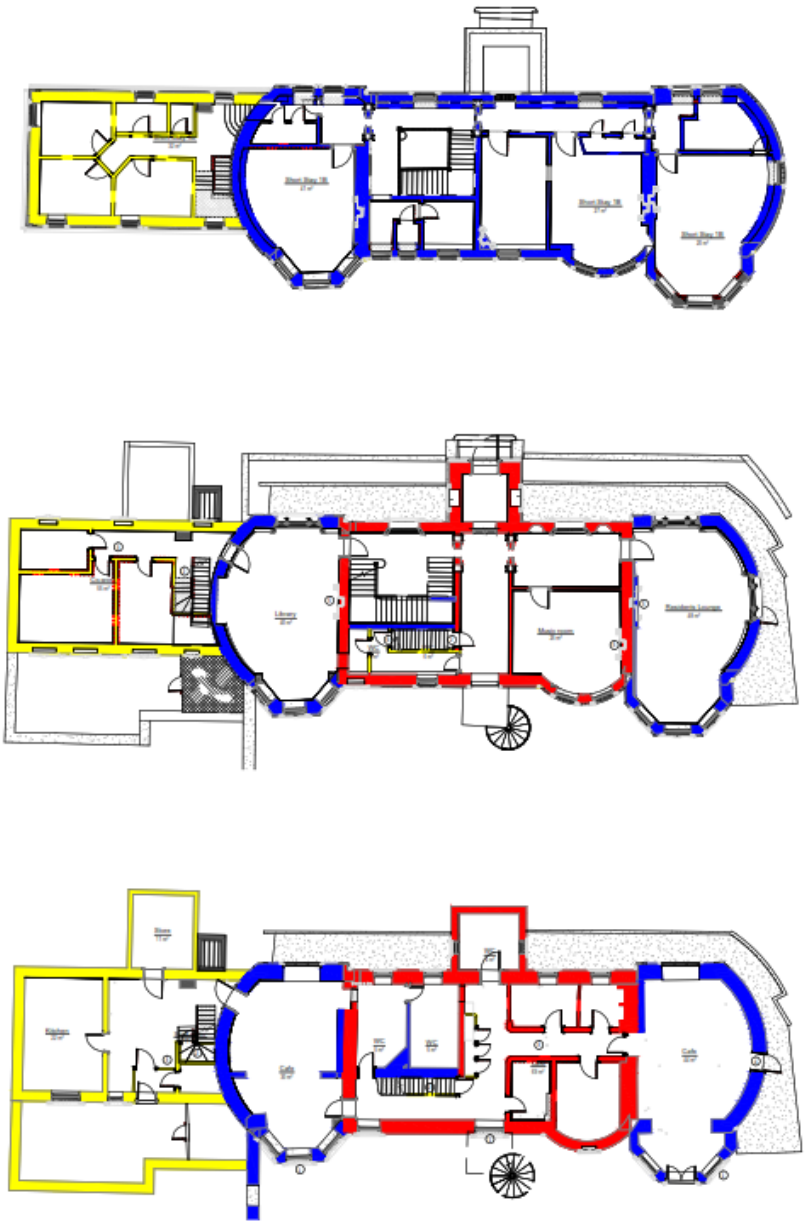


Fig.15.8: Existing Plans 1st Floor (top), ground floor (middle), basement (bottom) shows stages of development. Original villa in red, late 19th century wings and 1st floor in blue & late 19th century servant wing in yellow.

As noted above the house was originally called Richmond Cottage which suggests that it may have been a villa, with one main floor over a semi-basement. The 19th century maps show that the house was linked spatially with Carrickbrennan House to the west by a large landscaped oval. The eastern half of this oval is retained at Dalguise in the form of the graceful approach road. The cottage is a relatively common typology in the area. That the house originated as a more modest villa helps explain some of the peculiarities of the present house, with its narrow elongated plan, poorly integrated levels and elevational incoherence. The basement & ground floor plans suggest a simple tripartite plan typical of the villa typology. This arrangement does not extend to the first floor implying that this floor is a later addition. This implication is reinforced by the unusually large gap between the top of the ground floor windows and the sills of the first floor windows, again suggesting that a floor was added to a villa that had a tall main floor. Internally the architectural style and detailing of the main staircase are late 19th century, another indication that the top floor was added at that time. It has not been possible to identify the architect of the original villa, but the addition of the main stairs coincides with the involvement of the successful architectural firm of McCurdy and Mitchell in the development of a number of ancillary buildings on the site (greenhouse, stables and lodge). It is unlikely that such a successful firm would have concerned itself solely with these relatively insignificant buildings and it is likely that the addition of the upper floor, pedimented wings and western servant wing were built to this firm's design. There are a number of Jugendstil motifs in the interior décor suggesting that some further renovation was carried out in the early 20thcentury. Further undistinguished modernisations have been carried out throughout the 20th century A modern kitchen has been installed to basement, installation of heating system with associated pipework and radiators; modern carpets throughout much of ground and first floor;

Dalguise House

Dalguise House itself is a 5 bay, two storey over basement house. The front facade is symmetrical about a projecting entrance portico, with render pilasters supporting a segmented pediment above, and flanked at either end with narrow pedimented wings, complete with ground floor wyatt windows. The symmetrical effect is greatly weakened by a large two-storey projection to the western end of the house. Whatever elevational coherence the house possesses on its front façade is almost entirely lost on its south façade, which is an unresolved assembly of bays and fenestration with no clear ordering principle. As will be outlined below, the lack of a clear architectural idea is largely a result of the contingent nature of the house's development as it grew from a modest single storey over basement villa to the large, rambling edifice that we see today.

Fig.15.9: Front Elevation

The legacy of the original villa is also present in the plan form of the house, which is much shallower than the imposing northern, entrance façade would suggest. The house is effectively only one room deep with circulation running along the northern façade, terminating in large rooms, each with a curiously unresolved shape defined by a shallow curve at the far end. These rooms are housed within the pedimented wings referred to above, which were added to the east and west sides of the original villa. Later still a servants quarter was added to the west of the house.

The peculiar nature of the house is immediately apparent when studying the entrance floor plan. The visitor is immediately presented with a long narrow hall ending in glazed doors. The hall is flanked by two large rooms which have been subdivided to provide circulation, both horizontal and vertical to later extensions. It is these three spaces which formed the original simple tripartite plan of the original villa, with stairs located at the end of the now forlorn hall. The high status spaces are now located in the new part oval rooms located at either end of the original villa. The connection of these rooms back to the original core is weak and as a consequence the house loses the original clarity of the villa.

Fig.15.10: Rear Elevation (L), Entrance portico (R)

External Features

The external walls are rendered and painted with expressed quoins to the front, north-eastern elevation. The external render is primarily sand-cement, possibly over earlier lime-based render layers. The elevation is given expression by a continuous cornice, quoins to the wings and a plattband incorporated into first floor window cills, also in render; the stacks are clad in sand cement render and appear to be in reasonable condition; the roof is clad in natural slate, probably Bangor Blue, with ceramic ridge tiles; the windows are generally one over one timber sliding sash windows, although there are two large Wyatt windows to the front of the wings. There are also a small number of stained glass windows dating from late 19th or early 20th centuries; External doors are generally 20th century and of poor quality, the major exception is the four panelled entrance door with its elaborate sunken fields; the late 19th/early 20th century cast iron rainwater goods are in reasonably good condition; late 19th century cast iron railings and urns to the front of the house are retained and in good condition.

Fig.15.11: View of Wing (L), typical windows

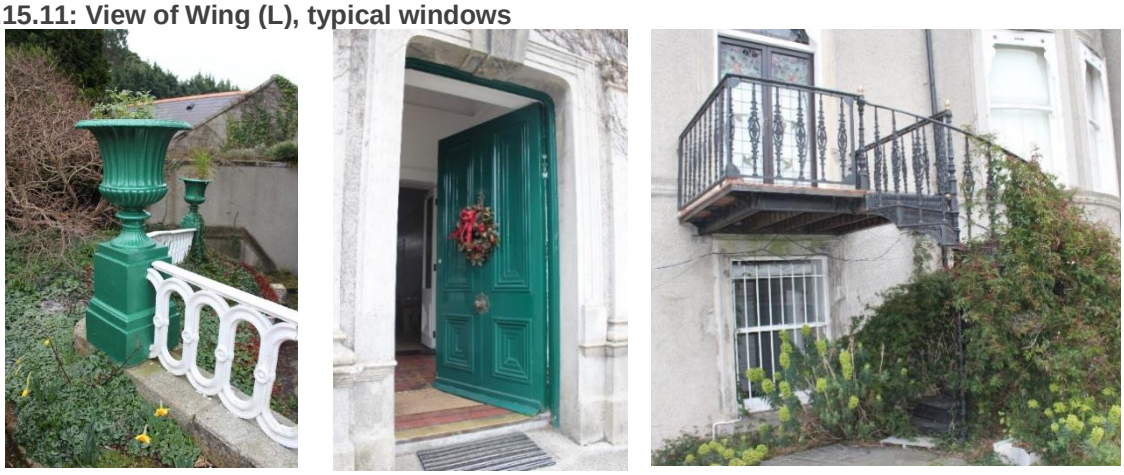


Fig.15.12: Cast iron railing & urn (L), Entrance Door (M), modern steel stair to rear elevation (R)

Interior

The interior of the house is as incoherent as the exterior. The visitor experiences a sequence of poorly related spaces tied together by long halls, corridors and randomly located stairs. None of the rooms have sufficient architectural quality to offset this. The large, set piece rooms in the wings are too low and geometrically unresolved, there is no functional or architectural hierarchy and the original villa rooms have been diminished by circulation requirements and probable reduction in ceiling height.

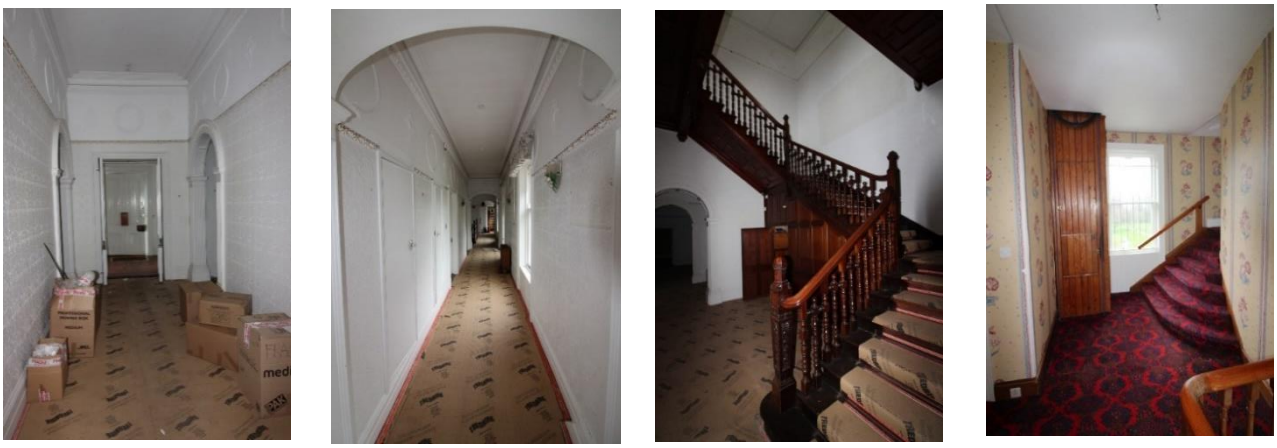


Fig.15.13: Entrance Hall (L), Corridor (ML), Main Stair (MR), typical internal circulation (R)

Fig.15.14: Set piece rooms in wings

Fig.15.15: West wing (L), basement (M), quarry tile basement floor (R)

The late 19th century, main accommodation stair is a timber construction which rises in three flights within a square, double height hall. This stair is augmented with two ancillary stairs which appear to date from the same period. The basement and west wing are utilitarian but largely retain their 19th century form and finishes. The 19th century quarry tile floor finish in the basement is largely retained. The floors on the ground and first floors are mainly covered with modern carpet underlay, although there are exposed pine boards to the large rooms in the wings. Internal joinery, including doors and architraves appears to be late 19th century. Skirting and architraves are generally simple and unremarkable.

Fig.15.16: Late 19th century fire piece (L), typical door joinery (M), cornice & frieze details (R)

The walls of the higher status spaces have a curtain rail with a decorative motif which varies according to location, sometimes a repeating raised, circular motif and, in one ground floor room, a distinctly Jugendstil pattern. The lack of stylistic consistency adds further to the house's architectural incoherence. This inconsistency continues in cornice and ceiling detail which range in style and execution.

Modern Interventions

There are four clearly modern structures within the curtilage, an indoor swimming pool, detached house, garage and a garden glass house. None of these structures has any architectural or conservation significance.

Fig.15.17(a): Swimming Pool (L), Glass house (M), detached house (R)

Fig.15.17(b): West end of Dalguise House with modern single storey garage in foreground

Walled Garden

A notable and unusual feature of the walled garden at Dalguise is its relationship with the house. In Ireland these gardens usually present as clearly defined elements, bounded on all sides by a tall masonry wall. Here the garden and the house are integrated, the house itself forming one side of the garden. This conflation may be a result of the relatively small size of the demesne. The inner side of the wall is built of red stock brick with flush lime mortar pointing, which has failed in numerous locations. The brick itself appears to be in satisfactory condition, protected by its projecting brick coping. The outer side of the wall is constructed of coursed random rubble granite stone which has been repointed with cement based saddle pointing. Despite this inappropriate detail, the wall fabric is in good condition, probably due to the hardness of the Wicklow granite.

Fig.15.18: View of inner wall (L), detail of brickwork (M), rubble stone on outer surface (R)

Stables

The stable yard is at the south west corner of the Dalguise curtilage. A high wall on its north and east sides separates the yard from the rest of the site. The stable yard is entered through a gateway in the north wall flanked by two fine cut stone gate piers. There are two buildings in the stable yard: the former stable building on the west side, and a partly ruinous and overgrown former coachman's cottage in the south east corner. The long former stable building which has a pitched roof. It is two storey in part. The stable building has been the subject of various alterations over the years. The building appears originally to have had a symmetrical east elevation with a large arched opening into the stables near each end. The southern one of these openings is gone, replaced by a modern opening with a horizontal beam over. There are numerous modern interventions and some parts of the walls of the building are of concrete block. The roof is modern. There are two later lean-to at the south and west of the Stable compound.

Fig.15.19: East elevation of stables (L), modern timber roof structure (M), Lean-to structure (R)

Other Garden Buildings

A 19th century greenhouse is located to the east of the indoor swimming pool adjacent to potting shed of similar age. Prolific Dublin architects, McCurdy and Mitchell, produced

drawings for a combined 'vinery' and greenhouse. These drawings appear to match the eastern two bays of this greenhouse. The greenhouse is in poor condition. Outside and attached to the south side of the walled garden there are a number of lean-to structures, mostly derelict. At the west end there is an open rusty corrugated iron structure; next is a small former apple store with a slated roof; and beyond that are overgrown structures where the walls and roof have partly collapsed.

Fig.15.20: Potting shed (L), Greenhouse (M), Derelict lean-to sheds south of walled garden (R)

Gate Lodge/Brick Lodge

The Gate Lodge/Brick Lodge is a small, single storey brick building with a plan of curious geometry and three projecting bays. McCurdy and Mitchell, referred to above, exhibited a drawing for a miniature gate lodge at the Royal Hibernian Academy in 1881 which is very similar to this building. The original external fabric, slate roof, brick walls, decorative joinery have survived in reasonable condition. Internally little original fabric has been retained.

Fig.15.21: Gate Lodge/Brick Lodge exterior (L), 1881 design of a lodge by McCurdy and Mitchell (R)

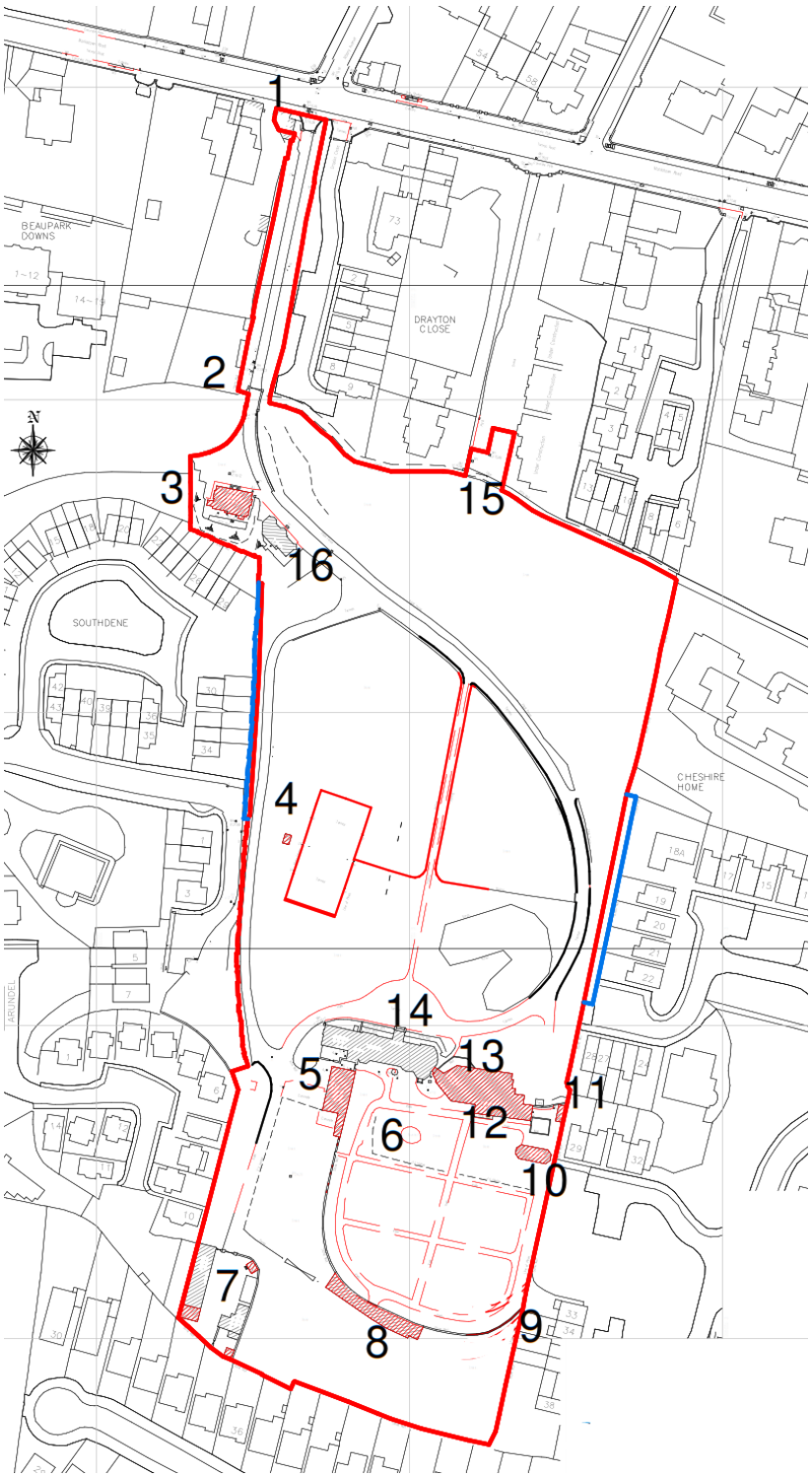
Dalguise Lodge/Entrance Lodge

Dalguise Lodge/Entrance Lodge on the Monkstown Road is a two storey, gabled cottage with natural slate roof, cast iron rainwater goods, harled masonry walls and timber casement windows. The exterior of the lodge is in reasonable, if neglected condition. The interior is in a poor state of repair with few original features retained.

Fig.15.22: Dalguise Lodge/Entrance Lodge exterior (L), Interior (R)

15.4 Potential Impacts of the Proposed Project

15.4.1 Construction Phase



DEMOLITION KEY

2. Modern entrance gates
3. Modern detached house
4. Tennis court & garden paths
5. Modern Garage
6. Garden paths
7. Lean to elements in Stables
8. Garden Sheds
9. South east section of Walled Garden
10. Modern Glass house
11. Potting Shed
12. Vinery (to be demolished)
13. Swimming Pool

Fig.15.23: Map showing Buildings & Features to be demolished (in Red)

Fig.15.24: Map showing proposed development

i) Setting

Sensitivity to Change*:* The existing site is assessed as having a Medium sensitivity to change.

- It forms the curtilage of a Protected Structure
- It retains some elements of the 19th century layout, notably the carriage way, lawn, walled garden and stables. The special interest of the front, north landscape has been considerably diminished by the loss of the western half of the landscaped oval.

Degree of Change: The Development is assessed as having the potential to cause an overall change to the setting which is High in degree.

- The existing setting is almost rural in character. The proposed development includes 11 No. apartment buildings the tallest of which is 9 storeys.
- The Historic Landscape enjoys Group Value with Dalguise House. The degree of change to that landscape that is introduced by the development is high.
- This scale of development cannot be reversed.

ii) Main Circulation Routes

Sensitivity to Change: The existing carriage routes are assessed as having a Medium sensitivity to change.

- The existing carriage routes from the north was originally integrated around an oval lawn that was shared with the adjacent house to the west. This unified scheme was destroyed by the development of the adjacent western site for housing. The carriage route is retained on the Dalguise site.

Degree of Change: The Development is assessed as having the potential to cause an overall change to the setting which is Moderate in degree

- As can be seen from the site plan, the primary historic routes will be retained and will provide new development with its ordering principal. The main avenue will continue to sweep gently south towards Dalguise House and the tree lined avenue leading down to the stable yard will be retained and become part of the internal circulation within the new scheme. Tree planting along avenue will be reinforced and most vehicular traffic will be directed to the basement not through the site and the character of the avenue will be retained. The retention of these routes as the backbone of a large new development will preserve these

routes into the future, and as such will result in positive effects on the heritage of these historic feature

iii) Lodges

Sensitivity to Change: The existing 19th Century Lodges are assessed as having a Medium sensitivity to change.

- Lodges forms part of the curtilage of a Protected Structure & dates from late 19th Century.
- Dalguise Lodge/Entrance Lodge on the public road is the only building within the Monkstown ACA.
- Dalguise Lodge/Entrance Lodge is in reasonable condition externally but in very poor condition internally. The Gate Lodge/Brick Lodge is in better condition but is in need of refurbishment.

Degree of Change: The Development is assessed as having the potential to cause an overall change to the setting which is Medium and positive in degree.

- The restoration of these structures, to best conservation practice, will enhance the conservation significance of the site. Proposed works to restore the gate lodges and to give them new use will result in significant positive effects on the heritage of these structures.
- The removal of the west facing chimney of the Gate Lodge/Brick Lodgewill result in moderate negative effects on the heritage of that structure.
- The removal of internal partitions and doors in both lodges will result in moderate negative effects on the heritage of those structures.

iii) Modern Buildings

Sensitivity to Change: The existing modern buildings are assessed as having a Low sensitivity to change.

- The existing 20th century structures on the site are the swimming pool, detached house and garage are all of poor architectural quality and no conservation significance.

Degree of Change: The Development is assessed as having the potential to cause an overall change to the setting by removal of these structures which is Medium and positive in degree.

- All will be demolished. This will result in a positive impact on conservation significance of the site.

iv) Works to Dalguise House

Sensitivity to Change*:* Dalguise House is assessed as having a Medium sensitivity to change.

- The House is a Protected Structure
- It is located outside of Monkstown ACA
- The House has been subject to extensive renovation over many years and its presentation and fabric has been changed considerably.

Degree of Change: The Development is assessed as having the potential to cause an overall change to Dalguise House which is Medium negative in degree.

- There will be no impact on the external presentation of Dalguise House. The historic fabric, windows, render, etc. will be refurbished or repaired as required to best conservation practice. The following external works will moderately enhance the significance of the heritage asset;
  - Removal of modern security bars on all Lower Ground Windows
  - Removal of external door to swimming pool and reinstatement to match existing external wall.
  - Demolition and removal of lean-to Roof at the rear and reinstatement of external wall to match existing finish.

  The following external works will have a neutral impact on the significance of the heritage asset;
  - Removal of an existing external window at lower ground level and replacement with external door to the new outdoor seating area.
- Internally much of the proposed works involves removal of existing partition walls, particularly in the basement & servants' wing and insertion of new partition walls and new sanitary ware to the top floor.
- The removal of partition walls in the basement will generate negative effects on the architectural heritage of the house, as will the division of the two large bow ended rooms at first floor.
- The western annexe (servants' wing) is of little heritage value, and as a stand-alone structure would be very unlikely to be protected. The interior of the western annex is poorly laid out with awkward shaped rooms and circulation spaces, and a dangerous stair. The removal of this secondary stair will not impact on the conservation significance. The new layout will provide more usable spaces. There will be a neutral impact on the site's conservation significance.

v) Works to Glasshouses / Greenhouses

Sensitivity to Change: The Green Houses are assessed as having a Medium sensitivity to change.

- Both Glass houses are located within curtilage of Protected Structure
- The 19th century vinery has historical special interest, the 20th century glass house has none.

Degree of Change: The demolition of both greenhouses is assessed as having the potential to cause an overall change to the existing retained Greenhouses which is moderately negative in degree.

vi) The Walled Garden

Sensitivity to Change: The existing walled garden is assessed as having a High sensitivity to change.

- It forms a significant element of the curtilage of a Protected Structure
- It has retained its original form and fabric.

Degree of Change: The Development is assessed as having the potential to cause an overall change to the setting which is High in degree.

- The proposed development includes 2 No. apartment buildings in close proximity to wall and introduces new openings including a vehicular opening. The construction of a block of apartments in the walled garden will bring about a very substantial change in character, which will have a negative effect on the heritage of the walled garden.
- The walled garden enjoys Group Value with Dalguise House. The degree of change to that landscape that is introduced by the development is high.
- The removal of 12.4m length of the existing wall in the south-east corner will have a significant negative impact on the heritage of the walled garden.
- The proposed landscaping of the western half of the garden is likely to result in positive effects. –
- The making of 3 No. new openings in the wall will result in minor loss of fabric, offset by the proposed repair and refurbishment of the wall itself. The removal of the derelict structures when combined with the repair of the outer face of the wall, when exposed, is likely to result in positive effects on the heritage of the wall.
- The walled garden has not been in use for its original purpose as a productive garden for fruits and vegetables for some time. The landscaping of the walled garden as public open space will bring

new life and help preserve the historic fabric of the wall into the future. The scale of the proposed openings is small compared to the scale of the main wall itself.

vii) The Stable Yard and Stable Buildings

Sensitivity to Change: The existing Stable Yard and Stable Buildings complex is assessed as having a Medium sensitivity to change.

- It forms a significant element of the curtilage of a Protected Structure
- It has retained much its original form and fabric.
- It has not retained its original use function.

Degree of Change: The Development is assessed as having the potential to cause an overall change to the existing retained Greenhouses which is Medium and positive in degree.

- The works to the stable building will involve the removal of most of the existing modern interventions and a restoration of the original external character of the building, giving rise to positive effects on architectural heritage. The coachman's cottage will be renovated to best conservation practice. This represents an enhancement of the conservation significance.
- The demolition of existing lean-to-structures will have neutral impact on the historical setting.

Impact on Setting of Protected Structures

To assess the impact on setting, Reddy Architecture + Urbanism have prepared a series of computer generated views to represent the characteristics of the proposed development. For each view the 'As Existing' and 'As Proposed' version of the view is presented.

Fig.15.25: View looking east with Gate Lodge/Brick Lodge

The existing view on the left shows the Gate Lodge/Brick Lodge sitting in verdant isolation. The proposed view on the right shows that much of this verdant quality is retained, as is the route of the historic carriage access. The introduction of a large apartment building to the north of the route very significantly impacts on the setting of

the lodge, this impact is partially mitigated by the considered architectural and material expression of the new building.

Fig.15.26: View toward front façade of Dalguise House

The existing photo on the left shows that front lawn is dominated by the awkward symmetry of the front façade of Dalguise House. The proposed image on the right shows that the setting of the house, when viewed from the north, will be very significantly changed, but that the house still maintains its role as the focus of the site infront of a landscaped lawn,

Fig.15.27: View south down lane toward Stables

The existing photograph on the left shows the extensive vegetation which currently defines the site in general. The proposed image on the right indicates the intention to retain much of this natural quality.

The introduction of a low apartment block on the east side of the lane significantly changes the setting of the lane but this impact is mitigated by the reduction of scale of the apartment blocks towards the western boundary, and by the by the considered architectural and material expression of the new building.


Fig.15.28: View from northwest corner of lawn looking east

The photograph on the left describes the existing rural nature of the site when viewed from the north-west corner of the front lawn, looking along the historic carriage route. The image on the right shows the intent to retain as much as possible of this rural setting, including the historic access route, despite the introduction of large apartment block (Block D). The introduction of a large apartment building to the south of the historic route very significantly impacts on the setting, this impact is partially mitigated by the considered architectural and material expression of the new building.


Fig.15.29: View of main stable block

The photograph on the left describes the derelict condition of the coachman's cottage to the left and the historic stables building, in better condition, on the right. The view on the right shows that both the cottage and stable block will be fully renovated, and set in a landscaped setting. These works represent a significant enhancement of the curtilage of the Protected Structure.

Views Fig.'s 15.25, 15.26 & 15.28 above show that the introduction of the apartment blocks will radically alter the nature of the site as a consequence of scale.This impact is partially mitigated by the considered architectural and material expression of the new buildings and.the spatial strategy, which seeks to maintain critical characteristics of the site, such as the centrality of Dalguise House, the nature of the circulation, retention of all historical built form. This suggests that the impact, as calibrated on the assessment schedule above, should be considered as very significant in general, but imperceptible at the historic Stable Block

Dalguise House and its grounds sit within an area which was developed as a very low density suburban development in the first half of the 19th century, characterised by large detached

houses sitting within considerable grounds. The grounds of these houses have been subjected to a policy of intensification of suburban development over the last 50 years, as evidenced by the immediately adjoining sites which were also once single houses on large landscaped plots. In this context, the proposed development is a continuation of that well established intensification process.

Impact on Setting of Monkstown Architectural Conservation Area

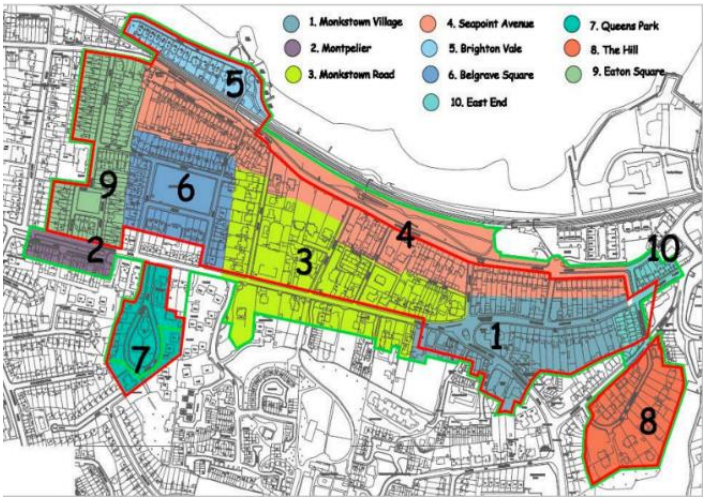


Fig.15.30: Map of Monkstown Architectural Conservation Area

In the Visual Impact Assessment Report, lodged with the planning application for the proposed development, photomontages are presented from various locations within the Monkstown ACA, looking towards the Dalguise site. These photomontages are from locations from which part of the development will be visible and from other locations where the development will not be seen. These photomontage are helpful in illustrating the likely extent of effects on the setting of, or outlook from, protected structures in the surrounding area. The relevant viewpoints are No.'s 2,4, 14, 15,16,17 & 19 as indicated on map below.

Fig.15.31: Map showing view locations within Monkstown Architectural Conservation Area

The views identified as *2, 4, 13, 14, 15, 16, 17 & 19* are shown below in descending order;

Fig.15.32: View 2

Fig.15.33: View 4

Fig.15.34: View 14

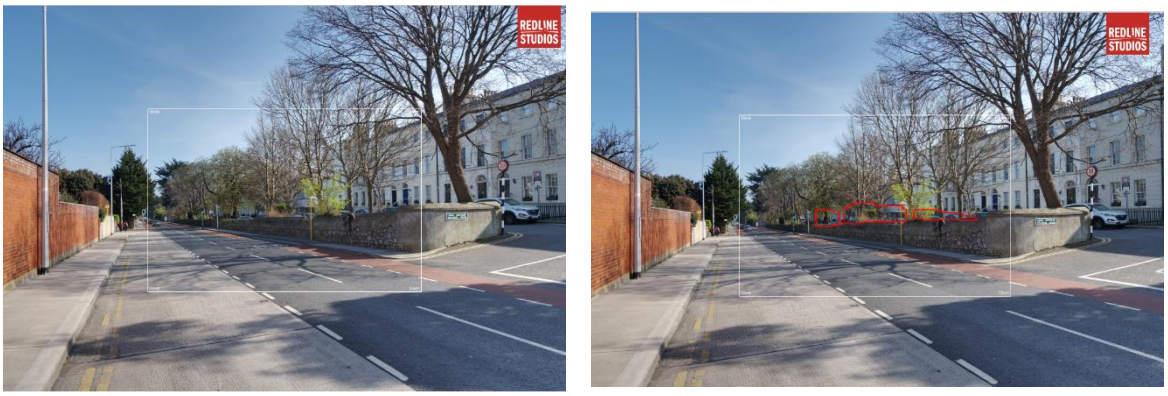


Fig.15.35: View 15

Fig.15.36: View 16

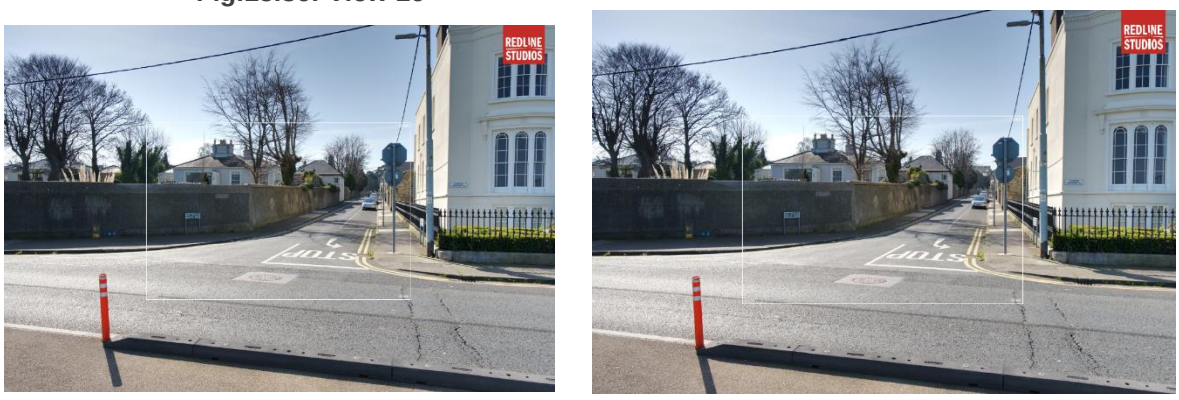


Fig.15.37: View 17

Fig.15.38: View 19

What all of the views above tell us is that, because of site topography and existing development, the impact of the proposed development on the Monkstown ACA public realm is slight.

15.4.2 Operational Phase

There are no predicted operational impacts upon the architectural heritage resource.

15.5 Mitigation Measures

15.5.1 Construction Phase

i) Setting

As a consequence of the development of the proposed project, the change in the setting of the house will be considerable. This suggests that the impact, as calibrated on the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, is considered as very significant. Dalguise House and its grounds sit within an area which was developed as a very low density suburban development in the first half of the 19th century, characterised by large detached houses sitting within considerable grounds. The grounds of these houses have been subjected to a policy of intensification of suburban development over the last 50 years, as evidenced by the immediately adjoining sites which were also once single houses on large landscaped plots. The proposed development is a continuation of that well established intensification process.

The degree of change to which the Perimeter Wall will be subjected has been mitigated by the following measures:

AH_1
Careful location of the apartment blocks so as to retain the spatial centrality of Dalguise House itself and to allow views of the House to visitor as they approach along

the historic carriage route, between Blocks D, E & F. The House defines the symmetrical relationship between Blocks F & G and has a direct axial relationship with Block E, the tallest.

The new apartment blocks are located at such a distance from the house that its form can be still clearly seen and understood. The same is true of the relationship to the walled garden, in which Block H is pushed east so as to retain the legibility of the broad sweep of the brick wall on its inside face.

ii) Main Circulation Routes

The degree of change to which the historic circulation routes will be subjected has been mitigated by the following measures:

AH_2
The special interest of the landscape of the grounds lies in the retention of half of a large landscaped oval which paired the house with Carrickbrennan House to the west. The eastern half of this oval is retained at Dalguise in the form of the graceful approach road. This route will be retained as the major circulation through the site to the south and this represents a significant retention of heritage significance and mitigation of impact.

iii) Historic Lodges.

The degree of change to which the historic lodges will be subjected has been mitigated by the following measures:

AH_3
Fabric repair works to the two historic lodges the buildings will give rise to positive effects on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands.

iv) Modern Buildings

The demolition of detached house, garage, modern glasshouse and swimming pool structure will give rise to a positive effect on Dalguise House and its setting.

v) Dalguise House

As outlined above, the original Richmond Cottage villa has been subject to considerable expansion in the latter part of the 19th century. This expansion involved the addition of wings, a servants' wing and an additional floor. The integration of the new into the existing building was not executed with particular skill, resulting in a house which is compromised externally and internally, both aesthetically and functionally.

The degree of change to which the historic house will be subjected has been mitigated by the following measures:

AH_4
Loss of any original fabric from the Dalguise House will be minimal and the removal of non-original fabric will give rise to positive effects.

AH_5
The provision of long term sustainable use for Dalguise House will also give rise to 'moderate' positive effects architectural heritage.

The impact on the conservation significance of the house will therefore be moderate.

vi) 19th Century Vinery / Greenhouse

The 19th Century Vinery / Greenhouse will be demolished. There are no mitigation measures.

vii) Walled Garden

The degree of change to which the walled garden will be subjected has been mitigated by the following measures:

AH_6
Works to the fabric of the walled garden will give rise to a positive effect on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands.

viii) The Stable Yard and Stable Buildings

The degree of change to which the Stable Yard and Stable Buildings will be subjected has been mitigated by the following measures:

AH_7
- Works to the fabric the Stable Yard and Stable buildings will give rise to positive effects on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands.

AH_8

- The provision of long term sustainable use for these structures will also give rise to 'moderate' positive effects architectural heritage

15.5.2 Operational Phase

No mitigation is required

15.6 Residual Impacts

Asset	Impact Before Mitigation	Impact After
Setting	Profound Negative	Significant Negative
Main Circulation Routes	Significant Negative	Moderate Positive
Gate Ldges	Slightly Negative	Moderate Positive
Modern Buildings	Moderate Positive	Moderate Positive
Dalguise House	Slightly Negative	Moderate Negative
Vinery/Greenhouses	Moderate Negative	Moderate Negative
Walled Garden	Significant Negative	Moderate Negative
Stable Yard & Buildings	Slightly Negative	Moderate Positive

15.7 Monitoring

The mitigation measures proposed for architectural heritage are deemed to fully achieve their intended effect when implemented. The mitigation measures therefore do not require monitoring.

15.8 Reinstatement

The proposed development does not include a decommissioning or reinstatement phase. Therefore, reinstatement is not applicable to this assessment.

15.9 Interactions

In respect of Heritage Assets, interactions with other topics are principally related to the development of the Historic Landscape:

- *Population & Human Health* – No interactions.
- *Biodiversity* – The Heritage Landscape provides a habitat for flora and fauna, and the loss of that habitat to development is an area of interaction. See relevant accompanying report for mitigation measures.
- *Land, Soils, Geology and Hydrogeology* – No interactions.
- *Hydrology & Surface Water* - The development of the historic landscape will increase the amount of surface-water run-off. See relevant accompanying report for mitigation measures.
- *Air Quality and Climate* – No interactions.
- *Noise and Vibration* – No interactions.

- *Landscape and Visual* – The development of the historic landscape significantly changes the character of the Development Site, including views into and out of the site. Mitigation measures in respect of landscape and visual appearance are discussed in Chapter 10 of this report.
- *Microclimate, Daylight & Sunlight* – No interactions.
- *Microclimate, Wind* – No interactions.
- *Roads & Traffic* – No interactions.
- *Waste Management* – No interactions.
- *Built Services* – No interactions.

15.10 Cumulative Impacts

No cumulative impacts (from surrounding permitted or proposed developments) are predicted upon the architectural heritage resource during the construction or operational phase. As indicated in the accompanying landscape plan, the site is to retain its boundary defining vegetation which will continue to act as a buffer between it and the surrounding area. Please refer to Chapter 21 Cumulative Impacts for the full list of committed or planned projects in the surrounding area.

15.11 'Do-Nothing' Effect

If the site is left in current condition there would be very significant risk of the Heritage structures suffering deterioration from lack of use and maintenance, and from the increased susceptibility to vandalism. The Protected Structure and curtilage survive through active management, which would likely cease with the abandonment of the site as noted above.

15.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered during the compilation of this chapter.

15.13 References

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16.0 MICROCLIMATE – WIND

16.1 Introduction

This chapter of the EIAR assesses the impacts of Wind & MicroClimate on the safety of pedestrian movements and use of amenity and balcony spaces generated by the proposed Large Residential Development (LRD) at the lands at Dalguise House, Monkstown, Co. Dublin. This chapter of the EIAR should be read in conjunction with the Wind Microclimate Assessment submitted as part of this planning application.

A Wind Microclimate Study identifies the possible wind patterns that form when wind moves through a built environment and evaluates how a new development is going to modify those patterns. Wind Microclimate is defined as the wind flow experienced by people and the subsequent influence it has on their activities. Wind can accelerate or re-circulate through buildings in such a way to compromise the comfort/safety of pedestrians and the capacity of using the public realm/ external places in accordance with their designated intended use. A wind microclimate study considers the possible wind patterns formed under both mean and peak wind conditions typically occurring on the site area, accounting for a scenario where the proposed development is inserted in the existing environment (potential impact) and, for a scenario where the proposed development is analysed together with the existing environment and any permitted development (not constructed yet) that can be influenced by the wind patterns generated by the proposed one (cumulative impact). The potential receptors include those areas, in the surrounding of the development, which can be exposed to potential risks generated by the elevated wind speed or building massing wind effects. In particular:

- Amenity areas (pedestrian level), areas likely to be utilised for leisure purposes and as such should be comfortable surroundings;
- Pedestrian routes and seating areas – to determine if locations are comfortable for leisure activities;
- Entrance to the buildings – to determine if there is potential for pressure related issues for entrances or lobbies;
- Landscaped areas – where there are sheltered areas; and
- Impact to existing or adjoining developments – where the proposed buildings will cause discomfort conditions through proximity related issues.

The acceptance criteria which define the acceptable wind velocities in relation to the perception of comfort level experienced while carrying out a specific pedestrian activity is known as the *"Lawson Criteria for Pedestrian Comfort and Distress".* A wind microclimate study analyses the wind flow in an urban context (considering the wind conditions typically occurring on the site during a typical year) to develop the so called *"Lawson Comfort and Distress Map"*; the map identifies where a specific pedestrian activity can be carried out comfortably during most of the time. The assessment can be performed by physical testing in wind tunnels or by performing *"virtual wind tunnel testing"* through numerical simulation using Computational Fluid Dynamics (CFD), as done for this project. The scope of the numerical study is to simulate the wind around the development this to predicting under

which wind speeds pedestrians will be exposed and what level of comfort pedestrian will experience when carrying out a specific activity (i.e., walking, strolling, sitting).

The following sections detail the methodology, acceptance criteria, CFD wind simulations and the impact of the proposed development on the local wind microclimate against best practice guidelines for pedestrian comfort and safety. This Chapter has been prepared by Dr Liam Harrington BSc Hons (Physics) MSc Energy Systems PhD Computer Modelling, a Computational Fluid Dynamics and Building Physics Consultant with over 25 years experience in computer modelling in the fields of Computational Fluid Dynamics, Dynamic Thermal Simulation and Lighting.

16.2 Methodology

This study uses the Lawson Pedestrian Comfort and Pedestrian Distress [1] criteria to assess the wind microclimate at pedestrian level for the proposed development at Dalguise House, Monkstown.

The pedestrian comfort criteria given in Table 1 quantify a person's comfort or discomfort due to the wind based on their activity. The criteria give an hourly average wind speed threshold that must not be exceeded for more than 5% of the assessment period. In this study, assessments covering the summer, winter, autumn, and spring periods, plus a whole year were undertaken. The report provides results of the summer assessment and the winter (worst-case seasonal) assessment.

Comfort Rating	Threshold Speed	Exceedance Time
Uncomfortable	10 m/s	> 5 %
Business walking	10 m/s	<= 5%
Strolling	8 m/s	<= 5%
Standing	6 m/s	<= 5%
Long-term sitting	4 m/s	<= 5%

Table 16.2.1: Lawson Pedestrian Comfort Criteria

Table 16.2.2 gives the recommended target pedestrian comfort designation for a variety of public area usage patterns.

Usage	Description	Target
Outdoor seating	For long periods of sitting such as for an outdoor café / bar	'Long-term sitting' in summer
Entrances, waiting areas, shop fronts	For pedestrian ingress / egress at a building entrance / window shopping, or short periods of sitting or standing such as at a bus stop, taxi rank, meeting point, etc.	'Standing' in all seasons
Recreational spaces	For outdoor leisure uses such as a park, children's play area, etc.	'Strolling' from spring through autumn
Leisure Thoroughfare	For access to and passage through the development and surrounding area	'Strolling' in all seasons
Pedestrian Transit (A-B)	For access to and passage through the development and surrounding area	'Business walking' in all seasons

Table 16.2.2: Recommended Target Comfort Rating for Different Public Space Usage.

The pedestrian distress criterion given in Table 16.2.3 quantifies a person's distress and/or safety due to the wind. Application of the pedestrian distress/safety analysis seeks to identify areas where a pedestrian may find walking difficult or could even stumble or fall. The criterion gives a wind speed threshold that must not be exceeded and is based on an exceedance probability of 0.022% [1].

Distress/Safety Rating	Threshold Speed
Unsuitable	15 m/s

Table 16.2.3: Lawson Pedestrian Distress Criteria

Accounting for the Effects of Gusts

Pedestrian comfort and pedestrian distress are not only affected by the mean wind velocity but also by shorter timescale wind gusts due to the turbulent nature of wind. Therefore, in this study wind gust speed is accounted for by calculating the equivalent mean wind speed, considering the standard deviation of the mean wind speed, in particular the turbulent kinetic energy, k:

$$\sigma_U = \sqrt{k * {}^{2}/_{3}}$$

Based on the work of Melbourne [4], the peak gust wind speed is derived as:

$$\widehat{U} = U_{MEAN} + 3.5\sigma_U$$

And the Gust Equivalent Mean (GEM) is derived as:

$$U_{GEM} = \widehat{U}/1.85$$

The pedestrian wind speed is defined as:

$$\max(U_{MEAN}, U_{GEM})$$

16.3 Baseline Environment

The baseline environment consists of the area to be developed as shown Figure 16.3.1 and its surroundings. The wind microclimate of the baseline environment is defined by the wind patterns that develop on the existing site under the local wind conditions. There is no designated public area in the existing context, therefore the application of the Lawson Criteria is done considering that potential receptors will use the area, for the different designated scope, when the proposed development will be constructed.

Figure 16.3.1: Site Location Map (Aerial).

Figures 16.3.2 to 16.3.7 show the CFD model geometry used in the study for the existing site conditions, and also the proposed development. The proposed development will provide 491 units in 11 Blocks, ranging in height from 3 to 8 storeys as shown in Figures 16.5.1.1 to 16.5.1.3 below, including 3 No. Houses. The geometry of the surroundings and terrain were built from Google Earth and OS data using photogrammetry techniques to digitise points that define the geometry over which a surface mesh was generated. Further details of the CFD geometry, mesh and solution method are given in Appendix C: CFD Modelling Methodology.

Figure 16.3.2: CFD Model Geometry for the Existing Site.

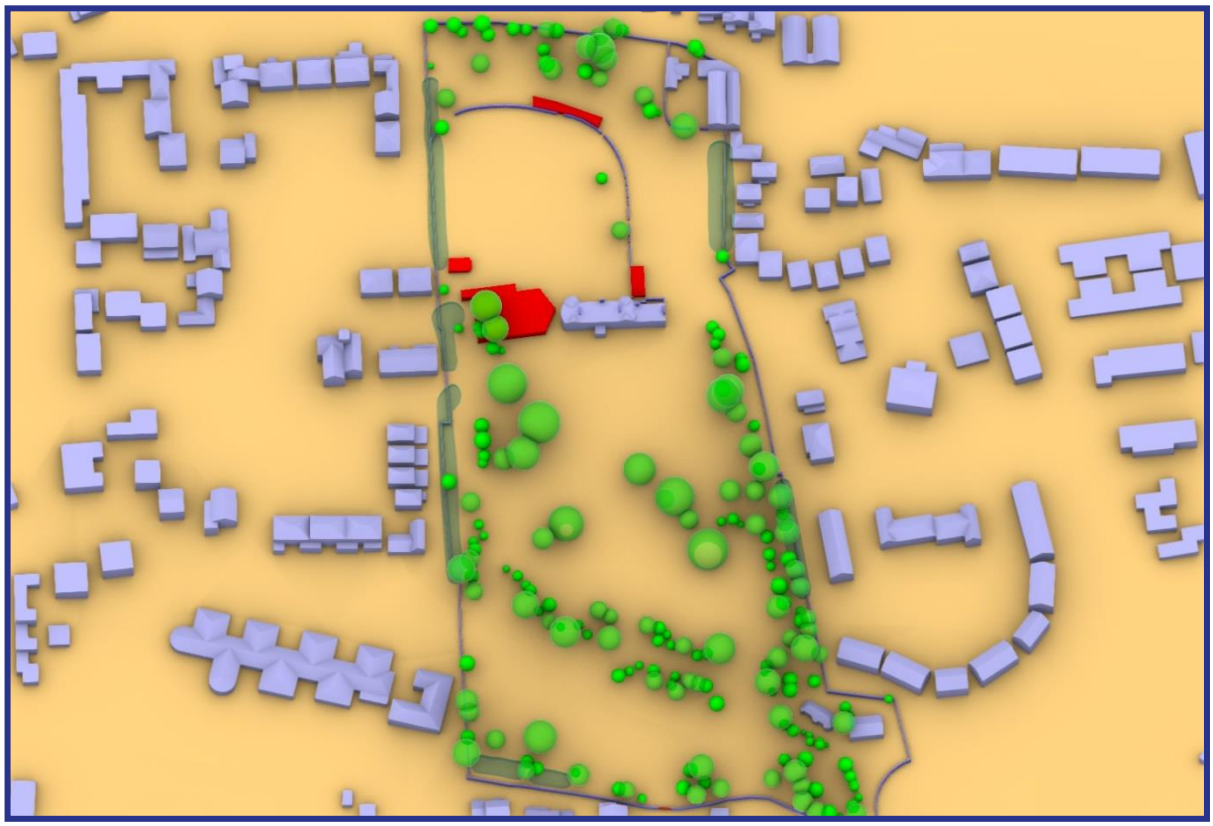

Figure 16.3.3: CFD Model Geometry for the Existing Site, Close-up from North

Figure 16.3.4: CFD Model Geometry for the Existing Site, Close-up from South

Figure 16.3.5: CFD Model Geometry for the Proposed Site, View from North

Figure 16.3.5: CFD Model Geometry for the Proposed Site, Close-up from North

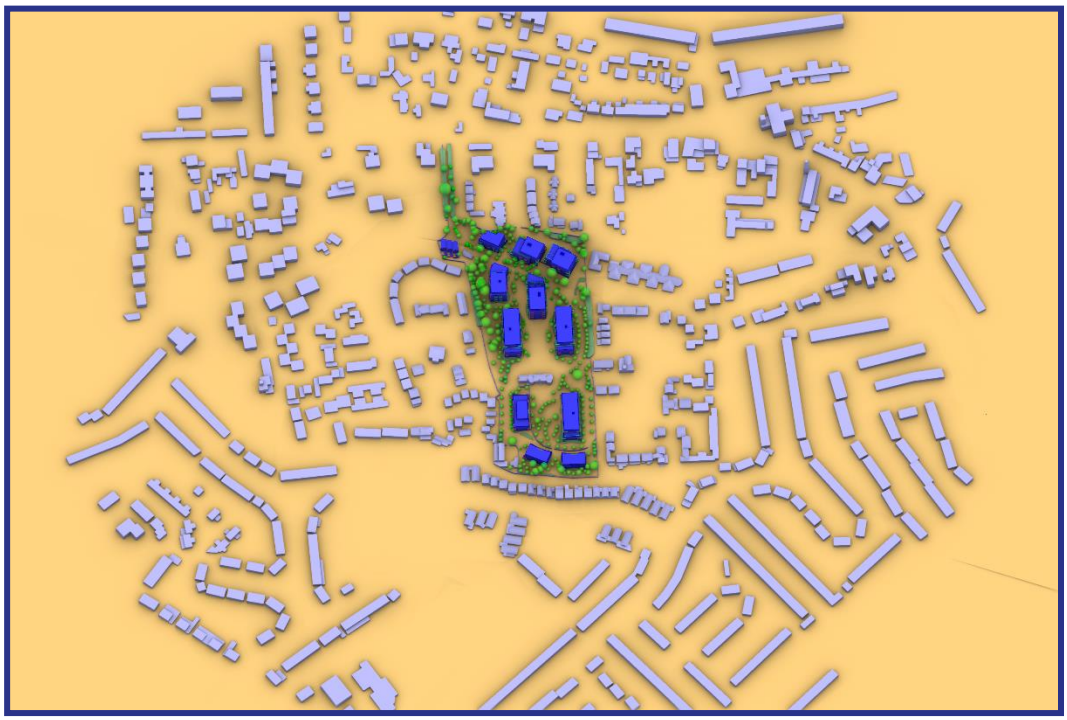

Figure 16.3.6: CFD Model Geometry for the Proposed Site, View from South

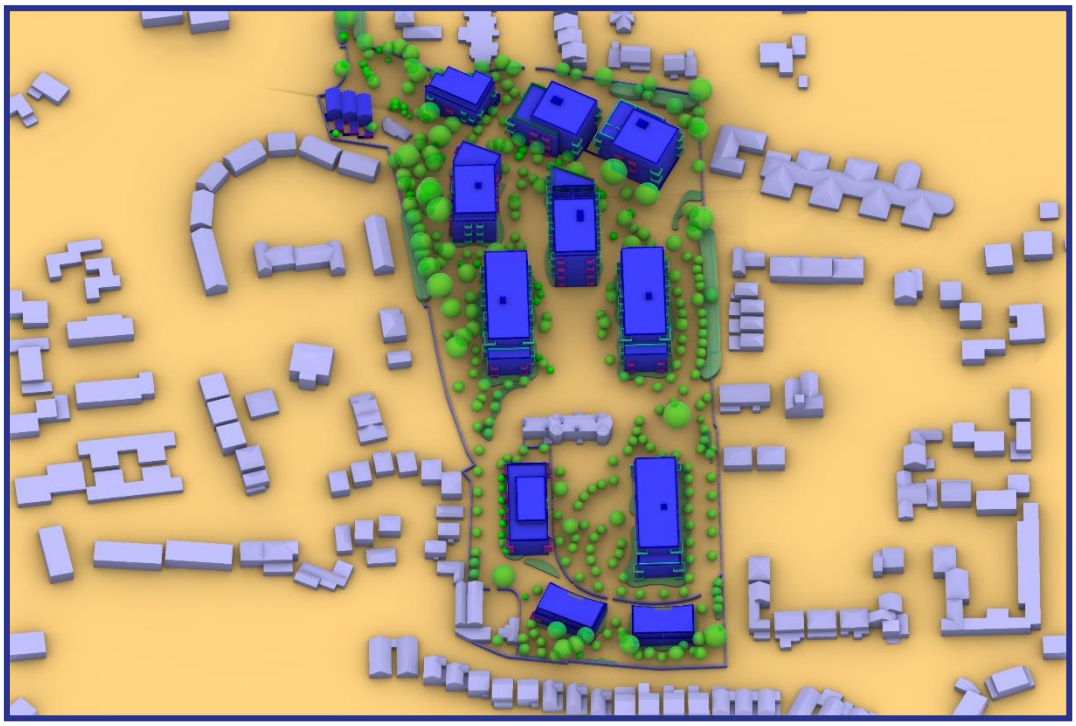

Figure 16.3.7: CFD Model Geometry for the Proposed Site, Close-up from South

The wind microclimate of the baseline scenario is defined by the wind patterns that develop on the site and it is the surroundings (existing buildings and topography) under the local wind conditions relevant for the assessment of the Pedestrian Comfort and Distress.

16.4 Potential Impacts

The wind microclimate of the proposed development is defined by the wind patterns that develop in the surroundings of the proposed development under the local wind conditions relevant for the Lawson Criteria, and considering the existing buildings and topography. For this analysis also the proposed landscaping is included as the presence of landscaping in corners of buildings and roads impact in a beneficial way the local microclimate, creating calmer wind conditions.

16.4.1 Construction Impacts

As construction of the Dalguise House Development progresses, the wind conditions at the site would gradually adjust to those of the completed development. During the construction phase, wind conditions will be in line with the baseline wind microclimate and the effect on potential receptors (pedestrians) can be considered imperceptible, for the reason outlined in the following example. Furthermore, the areas more sensitive for receptors are potentially not going to be used until construction will be finalised. An example of this is the open space play area. This will be one of the last areas to be constructed and will not be in use as a play area until the development is occupied. Therefore, during the construction period the wind

and microclimate impacts on this area will be the same as all other open spaces in the development.

16.4.2 Operational Impacts

The assessment of the proposed scenario has shown that no area is unsafe as shown in Figures 16.4.2.1 to 16.4.2.12 and 16.5.1.1 to 16.5.1.2, and no conditions of distress are created by the proposed development. This is because even with high winds the proposed roads and footpaths can be used for their intended scope (walking, cycling, driving). The proposed external amenity areas can all be used for long-term sitting/short term-sitting, as modelling results do not exceed the criteria outlined in Tables 16.2.1 to 16.2.3 above. The wind microclimate of the proposed development is therefore comfortable and usable for pedestrians. As a result of the proposed development construction, the wind on the surrounding urban context is also mitigated when compared to the same baseline situation due to the shelter provided by the proposed 11 blocks. In this sense the proposed development has a beneficial effect on the surrounding wind microclimate.

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the Figures 16.4.2.1 to 16.4.2.12 that follow in order of frequency of occurrence, from the most frequent wind direction to the least frequent one. These flow velocities identify whether wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed (baseline wind speed) by the presence of the proposed development. As illustrated below, wind speeds are shown to be within tenable conditions and in general comparable to the wind speed of the undisturbed flow for the direction considered.

Figures 16.4.2.1 to Figure 16.4.2.12 show contour plots of velocity magnitude ratio in and around the existing and proposed site for each of the 12 wind directions modelled. The velocity magnitude is calculated by dividing the local air speed by the reference air speed: the wind speed at 35m above ground level at the start of the explicitly modelled inner area of the domain as calculated by terrain and wind profile analysis using the EDSU methodology [6]. In order to assist the reader with understanding the figures below, we reference Figure 16.4.2.1 below, which represents the modelling of a Northerly wind. In the modelling of the Existing Site Conditions, areas of Richmond Park to the east of Dalguise House show wind velocities at 1.5m above Ground Level approaching the same velocity at 35m above Ground Level (2 streaks of orange/red velocity areas), whereas these are significantly improved when the proposed development is modelled due to the shelter provided by the proposed blocks.

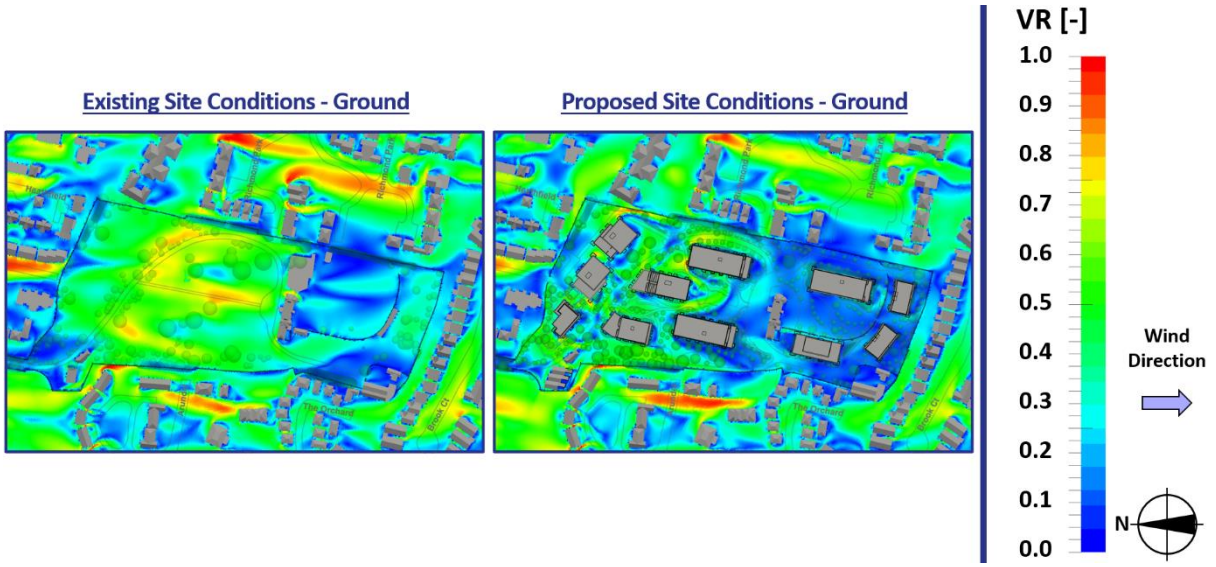

Figure 16.4.2.1: Velocity Ratio, Wind Direction of 0 Degrees (Northerly).

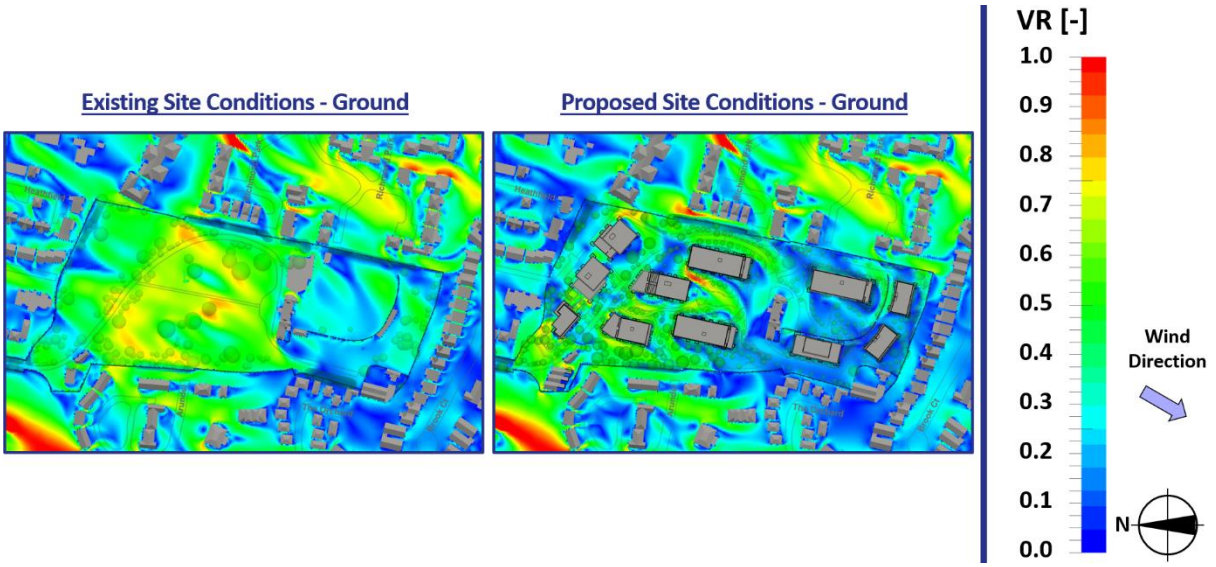

Figure 16.4.2.2: Velocity Ratio, Wind Direction of 30 Degrees.

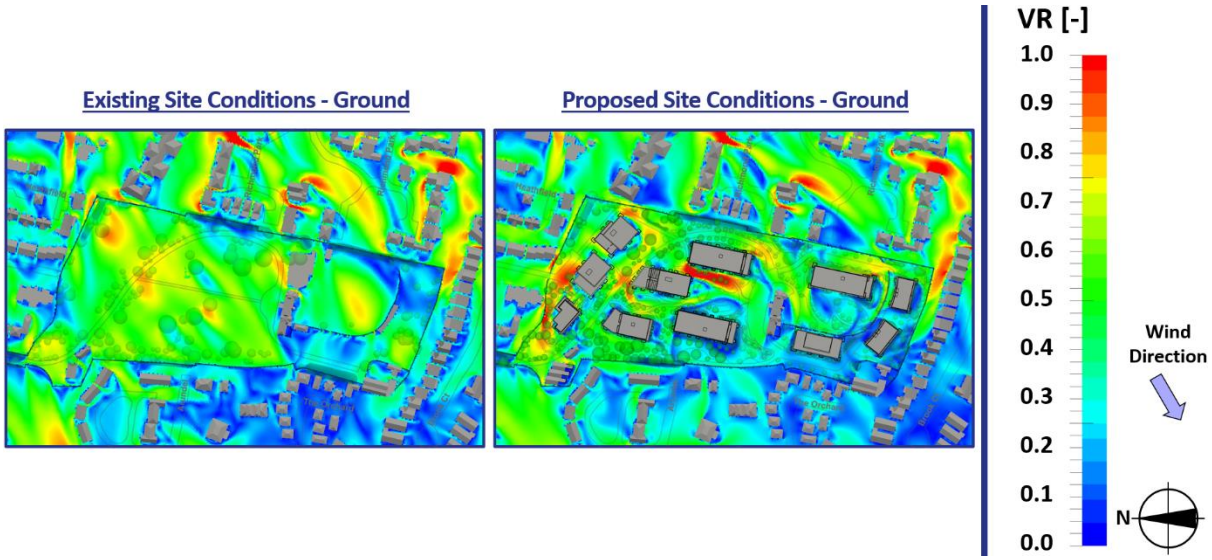

Figure 16.4.2.3: Velocity Ratio, Wind Direction of 60 Degrees.

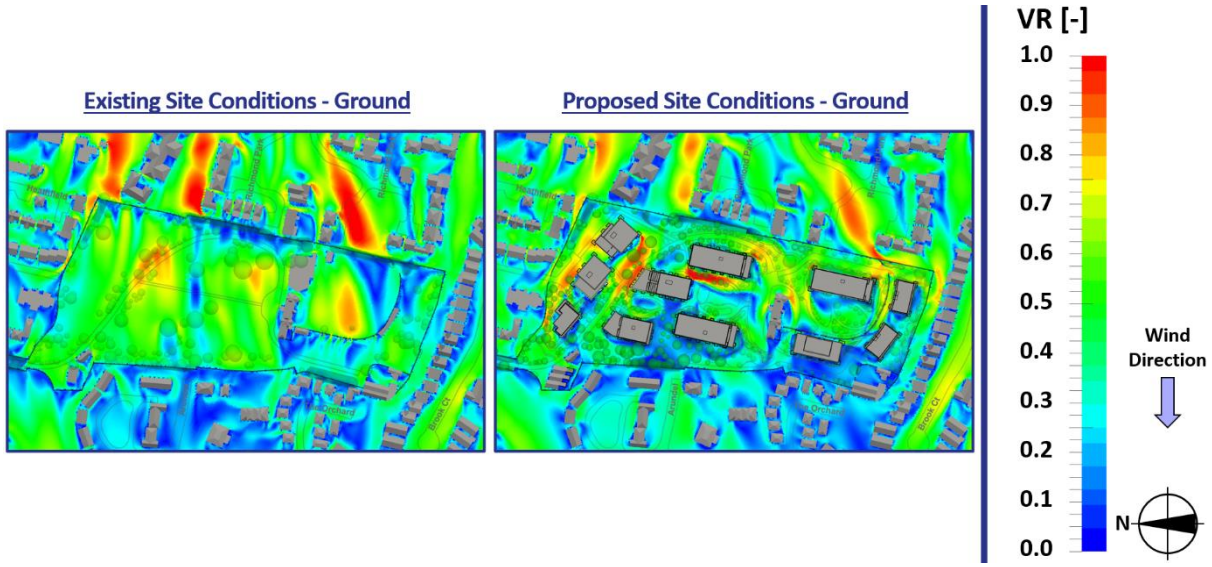

Figure 16.4.2.4: Velocity Ratio, Wind Direction of 90 Degrees (Easterly).

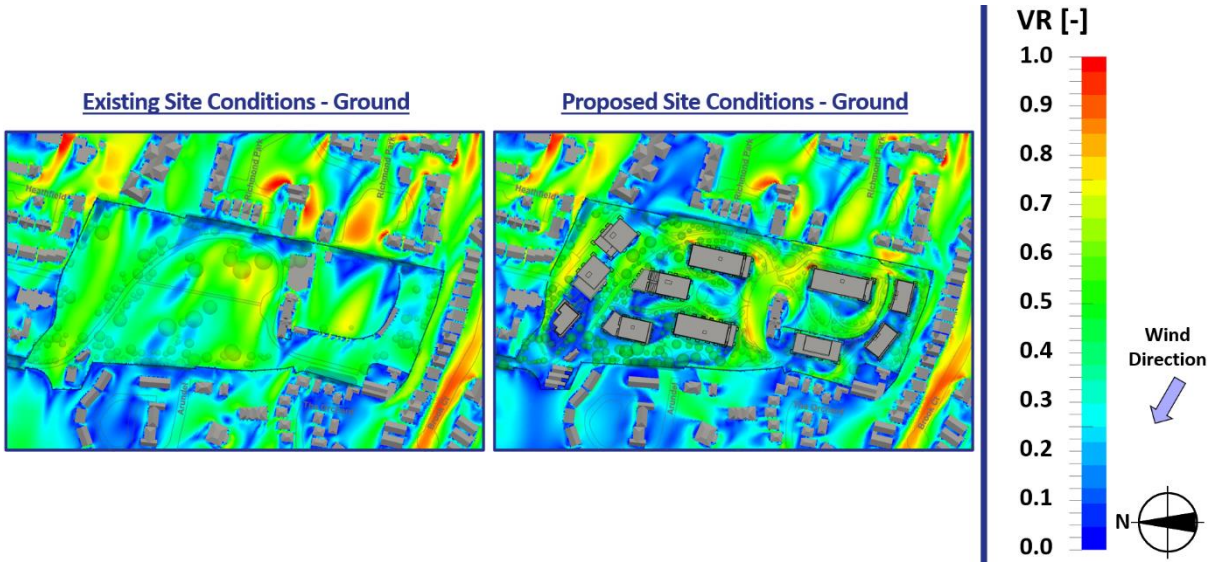

Figure 16.4.2.5: Velocity Ratio, Wind Direction of 120 Degrees.

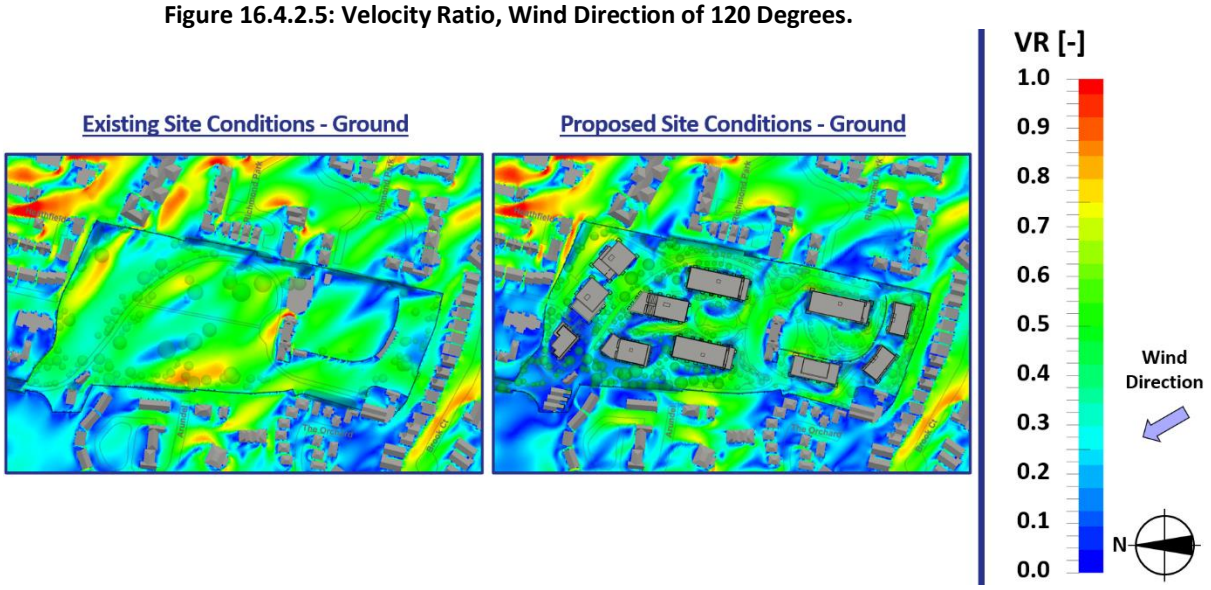

Figure 16.4.2.6: Velocity Ratio, Wind Direction of 150 Degrees.

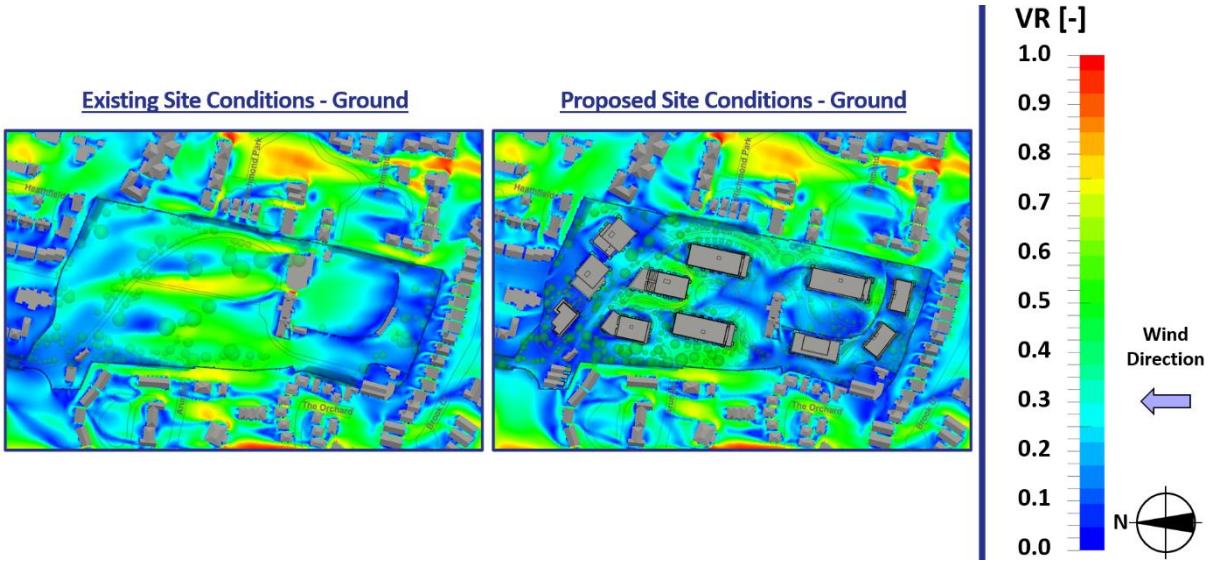

Figure 16.4.2.7: Velocity Ratio, Wind Direction of 180 Degrees (Southerly).

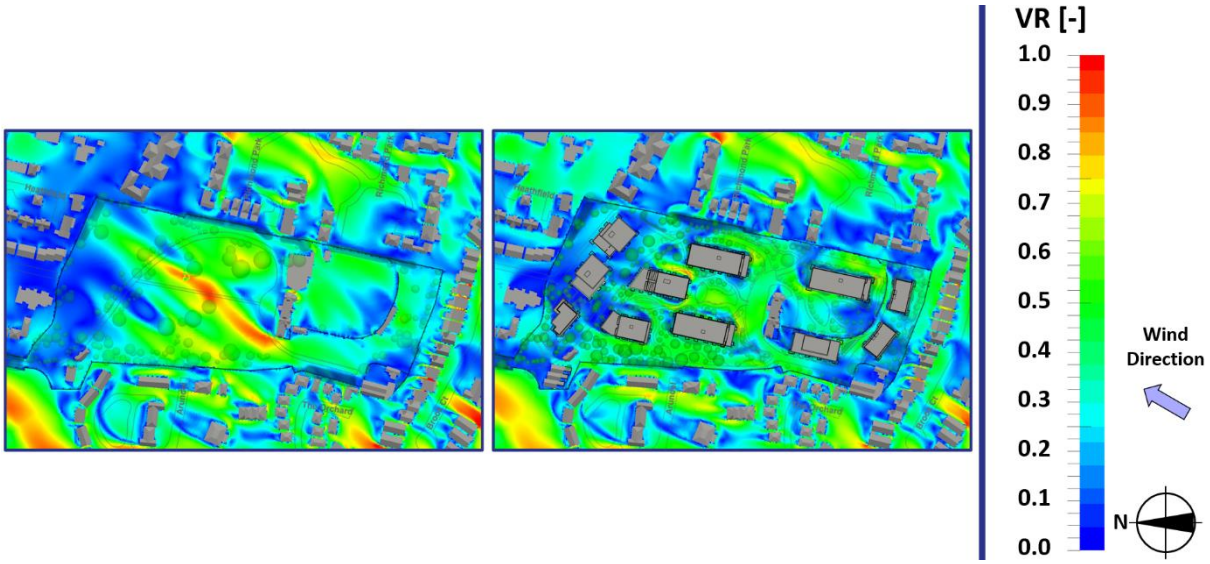

Figure 16.4.2.8: Velocity Ratio, Wind Direction of 210 Degrees.

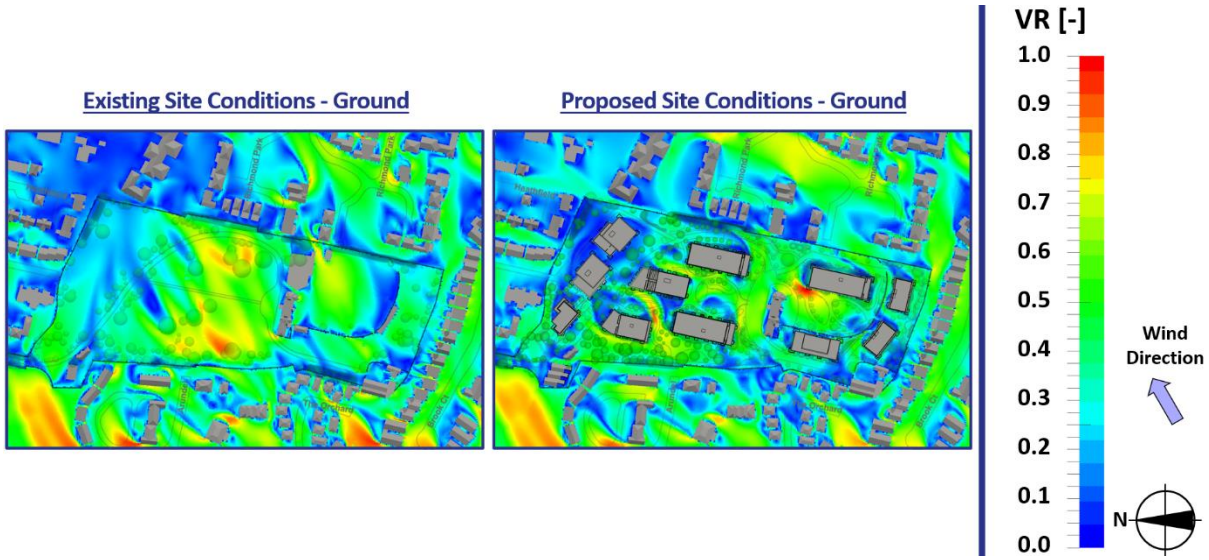

Figure 16.4.2.9: Velocity Ratio, Wind Direction of 240 Degrees.

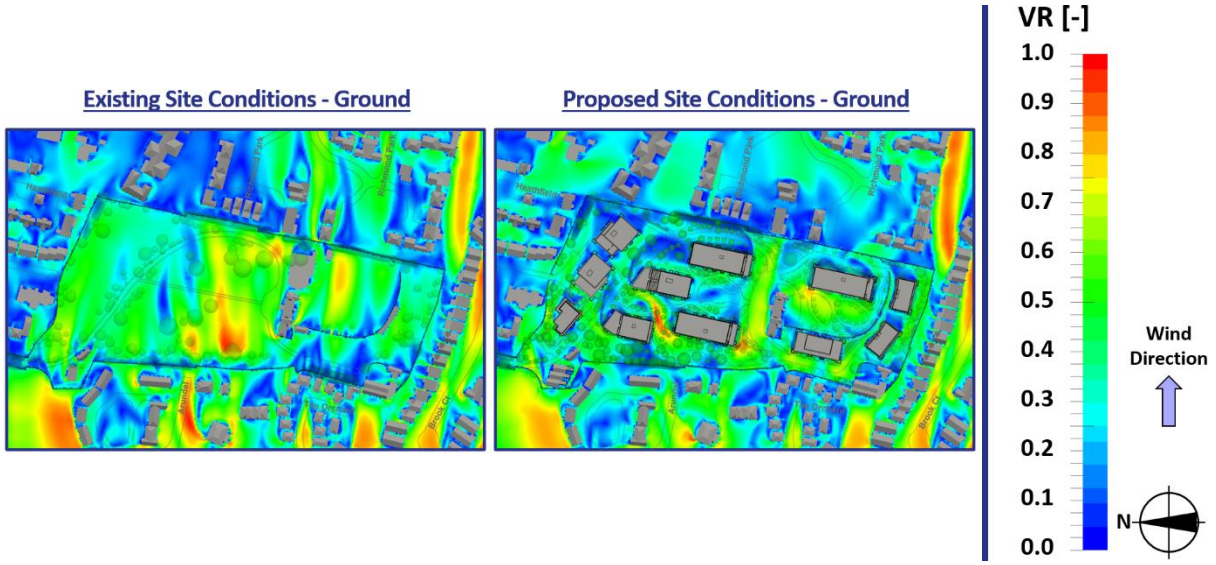

Figure 16.4.2.10: Velocity Ratio, Wind Direction of 270 Degrees (Westerly).

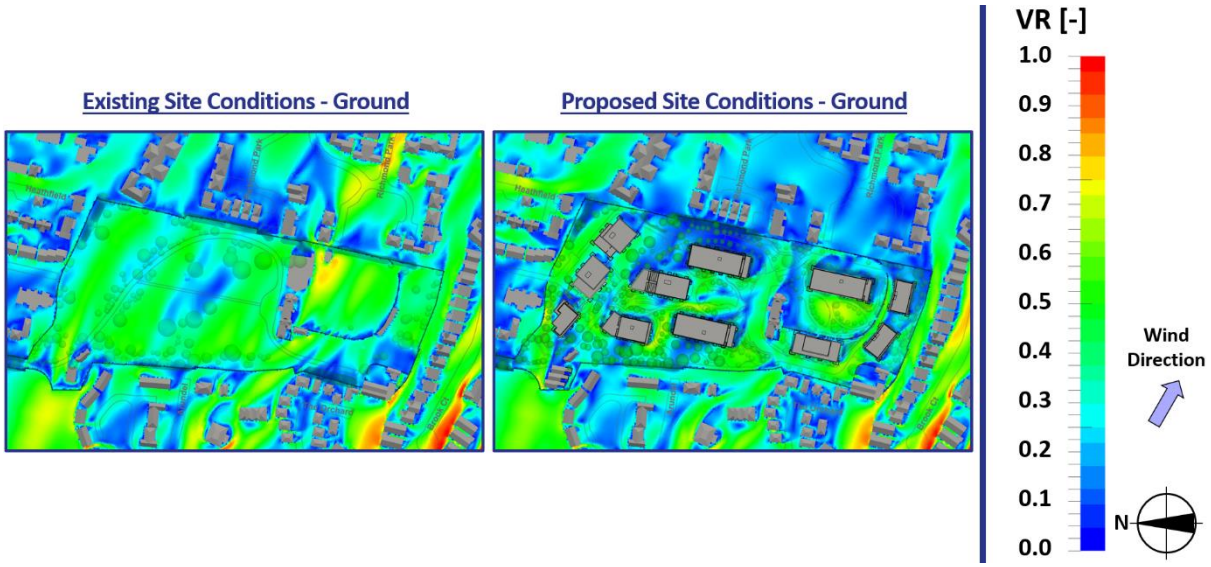

Figure 16.4.2.11: Velocity Ratio, Wind Direction of 300 Degrees.

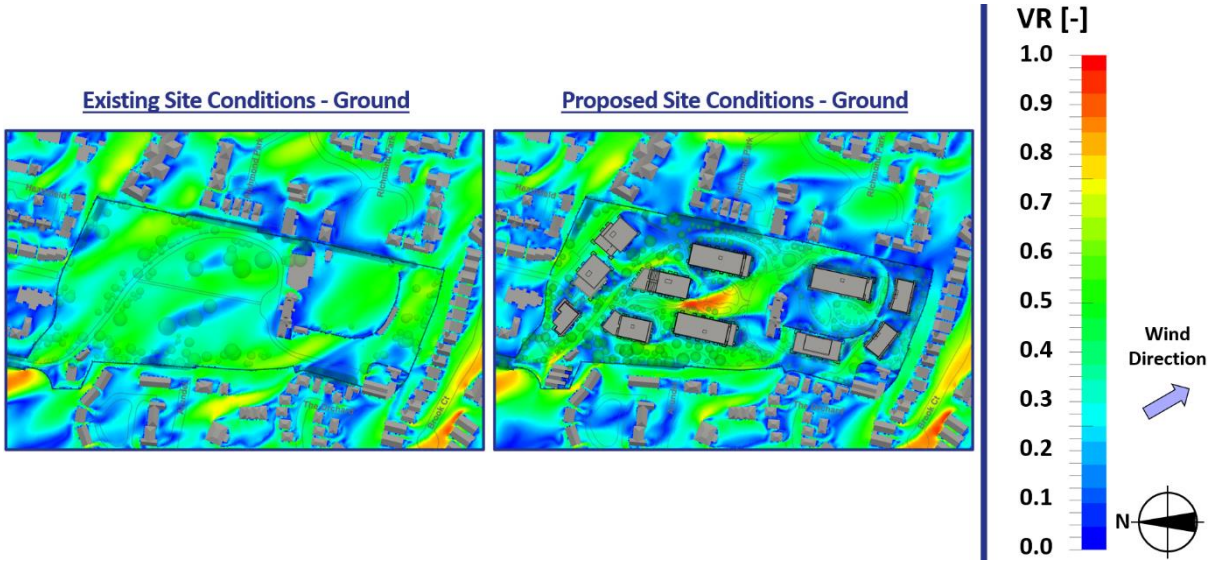

Figure 16.4.2.12: Velocity Ratio, Wind Direction of 330 Degrees.

16.5 Mitigation Measures

16.5.1 Construction Phase

W_1: Porous Mesh Panels to Balconies to Improve Pedestrian Comfort

Porous mesh panels improve comfort levels compared with solid panels, as solid panels cause an increase in velocity over them which can cause discomfort. Porous mesh panels allow wind to partially penetrate, leading to reduced velocities. Figures 16.5.1.1, 16.5.1.2 and 16.5.1.3 show contour plots of pedestrian comfort in winter, pedestrian comfort in the summer, and pedestrian distress/safety on the balconies and terraces of the proposed development respectively.

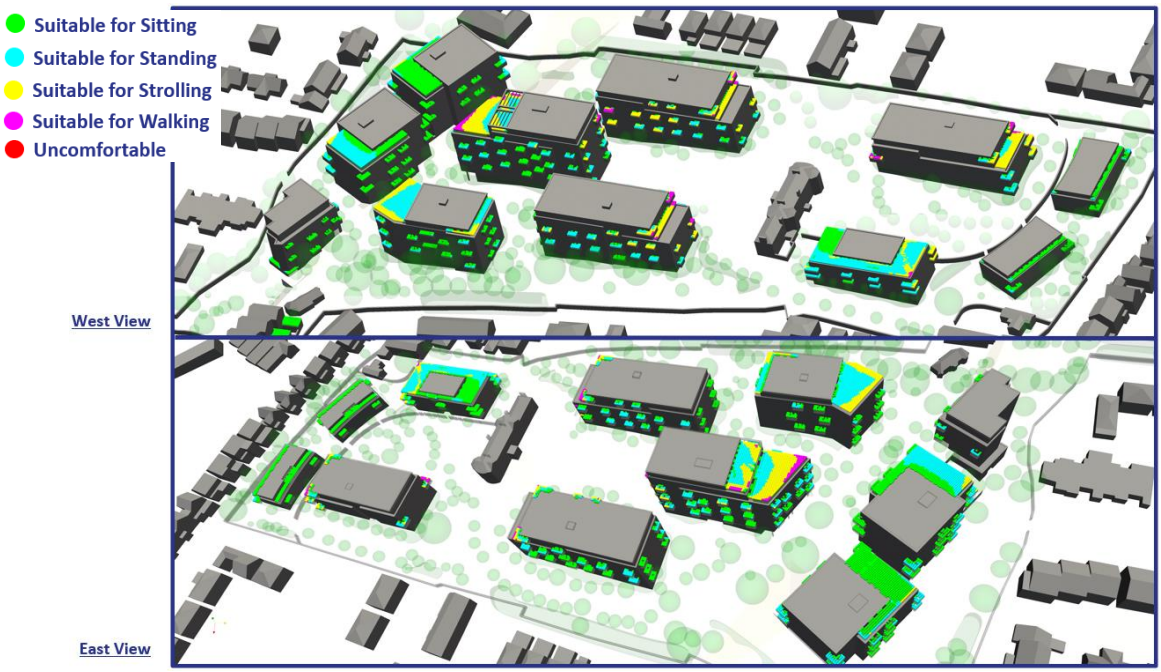

Figure 16.5.1.1: Pedestrian Comfort Rating for Worst Seasonal Conditions.

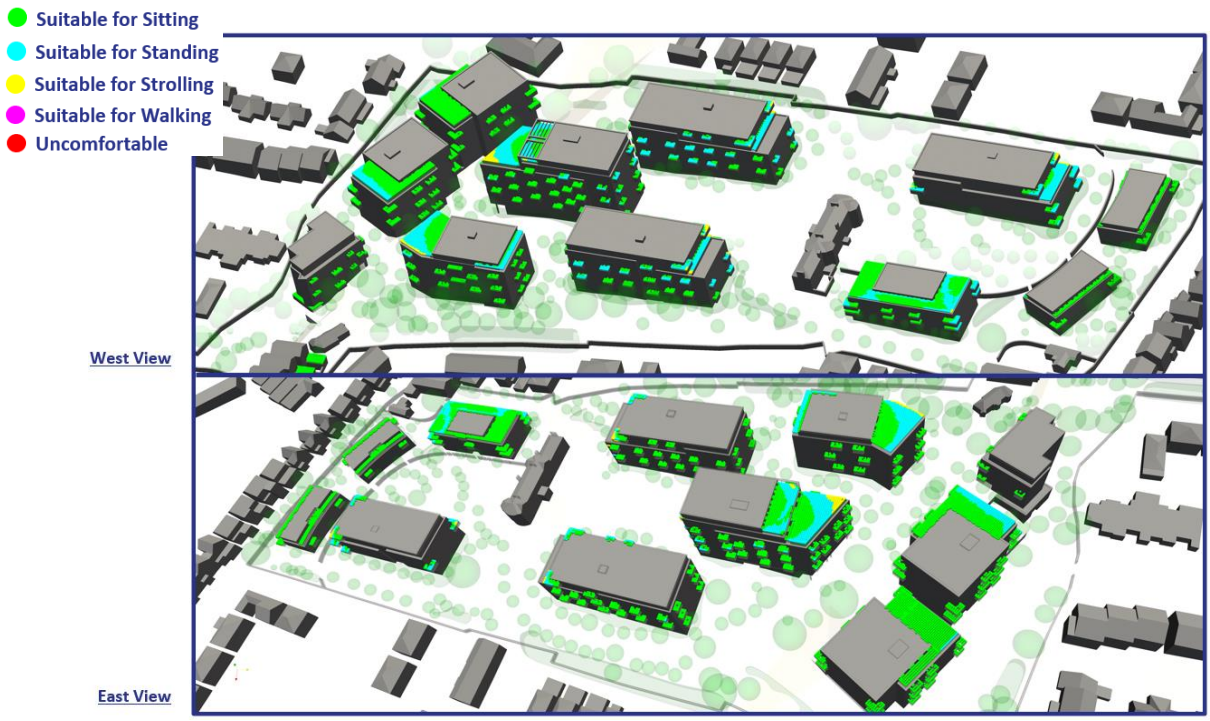

Figure 16.5.1.2: Pedestrian Comfort Rating for Summer Period.

Figure 16.5.1.2 highlights balconies and roof terrace areas where the summer period target rating of suitable for sitting is exceeded.

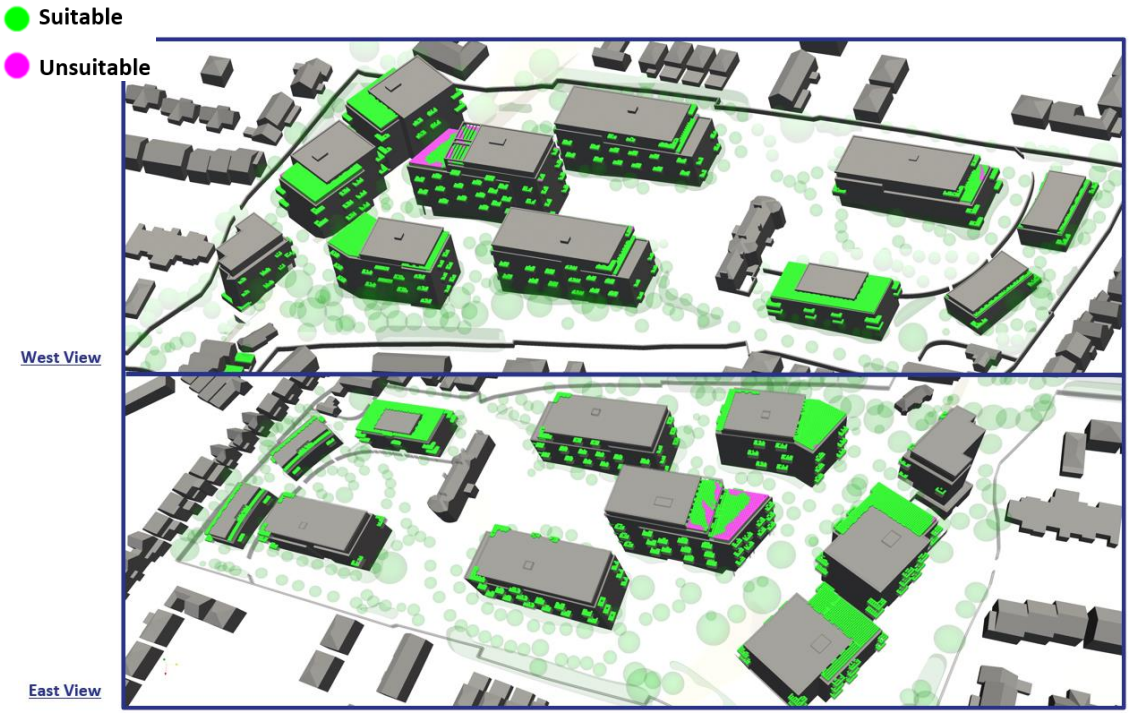

Figure 16.5.1.3: Pedestrian Distress/Safety Rating.

Figure 16.5.1.3 highlights balconies and roof terrace areas where wind speeds exceed the pedestrian safety criterion.

Exceptions to the Lawson Comfort and Safety Criteria were observed at high level balconies located on south and west facades, and close to the building corners. These balconies are higher than surrounding buildings and are more exposed to the prevailing winds.

Mitigation measures for the balconies will be in form of porous mesh panels (50%-65% porosity) with a height of 1.5-1.8m on the sides of the balconies. This would only be required only for higher level balconies facing the south and west.

W_2: Soft Landscaping adjacent to Block H

Mitigation has been provided in the form of evergreen soft landscaping in the areas between Block H and Dalguise House.

With introduction of the recommended mitigation, all pedestrian spaces outlined above will be safe and comfortable for their intended purpose.

16.5.2 Operational Phase

No further mitigation measures are required in addition to those outlined in the Construction Phase.

16.6 Residual Impacts

Wind cannot be eliminated or totally mitigated, as it depends on weather conditions, which could vary. The data of the historical wind conditions collected and reported in the previous sections shows that the wind speeds likely to occur on the site are below critical values and that a pleasant and comfortable microclimate can be maintained for most of the time and under the most frequent wind scenarios. Gusts and storms can still occur however, and they can create unpleasant and sometimes unsafe conditions. The pedestrian activities concerning the Lawson Comfort and Distress Criteria are not, in general, carried out during those weather conditions. Having considered the above, no further changes to the development design or further increasing of the landscaping is suggested, as safety and pedestrian comfort is maintained in accordance with Lawson Comfort and Distress Criteria.

16.7 Monitoring

There is no requirement to monitor wind impact during construction phase for pedestrian comfort and distress as the designated amenity areas will not be in use during this phase of the project and pedestrian are not accessing construction sites.

16.8 Reinstatement

The mitigation measures referenced for Construction Stage above remove the need for any reinstatement works.

16.9 Interactions

The wind microclimate analysed in this chapter has included the interaction of the wind on the site adopting the landscaping designed for the proposed site.

16.10 Cumulative Impacts

This section assesses the impact of the proposed development on the existing environment and considers projects that have been: 1. granted planning permission but that are not built yet and, 2. projects that have been submitted for consent but not yet consented. In accordance with the guideline cited in section 16.1.1, the wind microclimate study should consider the effect of the proposed development together with buildings (existing and/or permitted) that are within 400m from the centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the project site should be included for wind directions where they are upwind of the project site. In accordance with the guideline cited in section 16.1.1, the wind microclimate study should consider the effect of the proposed development together with buildings (existing and/or permitted) that are within 400m from the centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the project site should be included for wind directions where they are upwind of the project site.

The potential and permitted schemes within the vicinity of the proposed development are listed in Section 3.7.1 and 3.7.2 of this report. None of these schemes are located upwind in relation to the project site, therefore the only criteria to select the relevance of these scheme for the wind microclimate is based on their distance from the centre of the proposed site.

16.11 'Do-Nothing' Effect

In case the development will not be constructed, the wind conditions on the site will be in line with those obtained with the Baseline scenario wind microclimate.

16.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in compiling this chapter.

16.13 Conclusion

This Chapter has outlined the modelling methodology utilised to measure the impact of large residential blocks on the safety of the intended users of a development and the surrounding areas, namely the Lawson Criteria for Pedestrian Comfort and Distress. The Chapter outlines the modelling methodology and results for both the Baseline Condition of Dalguise House and of the proposed development. These are demonstrated for the 12 standard wind directions, and demonstrate that acceptable wind velocities were achieved throughout the development and in neighbouring areas when the mitigation measures of soft landscaping and balcony screens were introduced to the small number of relevant locations. The detailed assessment concludes that all areas will be safe and comfortable for their intended use on completion of the development.

16.14 References

- Lawson, T.V., 2001, 'Building Aerodynamics', Imperial College Press, London
- Simiu, E., 2011, 'Design of buildings for wind: a guide for ASCE 7-10 Standard users and designers of special structures', 2nd Edition, John Wiley and Sons, Inc., Hoboken, New Jersey, U.S.A.
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- Franke, J., Hellsten, A., Schlunzen, H., Carissimo, B, Ed. (2007); Best Practice Guidelines for the CFD Simulation of Flows in the Urban Environment, University of Hamburg

17.0 MATERIAL ASSETS - ROADS AND TRAFFIC

17.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) has been prepared by Roughan & O'Donovan Consulting Engineers (ROD) and assesses any likely and significant impacts associated with traffic due to the proposed development. Mitigation measures are proposed where negative effects are identified. This Material Assets chapter has been prepared by Eoin Ó Catháin of ROD. Eoin is a Partner and Technical Director in ROD and qualified as a Civil Engineer (BEng.) from University College Dublin (UCD) in 2004. He also holds post graduate qualifications in Transport and Environmental Engineering (MSc 2006, Trinity College Dublin [TCD]), Construction Law and Contract Administration, (PostGrad Dip, TCD, 2013), and Health and Safety (PostGrad Dip, TCD, 2020). He is a Chartered Engineer (CEng MIEI) with 18+ years of experience in traffic and transport engineering and planning. He is also a Registered Consulting Engineer (RConsEI), Member of the Chartered Institute of Arbitrators (MCIArb) and a graduate member of the Institute of Occupational Safety and Health (GradIOSH).

This chapter of the EIAR should be read in conjunction with the accompanying Transport Impact Assessment Report (TIA) and Travel Plan / Mobility Management Plan (MMP), which provide greater technical detail on aspects of the analysis.

17.2 Methodology

The following methodology has been adopted for this assessment in accordance with the EPA guidance for EIA and Guidelines for Traffic Impact Assessments' published by The Institution of Highways and Transportation:

An examination of the local regulatory and development management documentation has been undertaken, in addition to an analysis of previous 'transport' related, strategic and site-specific studies of development and transport infrastructure proposals across the area.

ROD conducted an assessment of available information on projected traffic trends, including the Transport Strategy for the Greater Dublin Area (GDA), the current *Dún Laoghaire Rathdown Development Plan 2022 – 2028* and Smarter Travel a Sustainable Transport Future. ROD calculated the estimated trip rates from the proposed development and added these figures to the base flows. ROD coordinated traffic count surveys undertaken in March 2022 in order to collate the full set of traffic data considered necessary to support the planning application for the proposed development. This will be explained in more detail in section 17.3.5. A Junctions 10 analysis was also undertaken to assess the capacity of the proposed accesses onto Monkstown Road (R119). From these results a conclusion could be drawn as to the impact that the development will have on the overall traffic flows. Once details were available ROD then assessed what impact the development had on the road network. An assessment of public transport provisions in the area was also carried out to determine the likely usage of public transport services by residents and visitors to the new development.

In addition, to the Transport Impact Assessment (TIA) undertaken, ROD prepared a Travel Plan / Mobility Management Plan (MMP) for the proposed development, with the specific objectives of reducing in overall terms both the number of trips generated by the development and ensuring that greater numbers use the extensive public transport services in the immediate area.

Byrne Looby & Partners assessed the construction stage traffic impacts of the proposed development on the wider road network as part of the Construction and Environmental Management Plan submitted with the planning application.

In terms of projecting future year traffic scenarios beyond the 2022 Base Year, the assumed Opening Year of the proposed development was taken to be 2024, with the Design Year taken as 2039. Pre-planning discussions also took place with Dun Laoghaire Rathdown County Council (DLRCC) on the proposed access and parking strategy.

17.3 Baseline Environment

This section considers the baseline conditions, providing background information for the site in order to determine the significance of any traffic implications. This section also considers the existing accessibility of the site by sustainable modes of transport.

17.3.1 Site Location

The proposed residential development is located south of Monkstown Road. The site is approximately 3.58 ha and is bounded by existing residential estates to south, east, and west. To the north, the site is bounded by Purbeck which connects with Monkstown Road by means of a simple priority T-junction. The site is approximately 300m from Monkstown Village and 500m from Salthill and Monkstown Dart Station.

An aerial image of the site is shown below with the subject lands outlined in red.

Figure 17.1: Aerial Photo of Site Location (Source: Google Maps)

17.3.2 Existing Cycling and Pedestrian Facilities

All the surrounding main roads have adequate width footpaths on both sides and crossing facilities at junctions. Along the R119 Monkstown Road footpath width on the south side is approximately 1.8m and between 2-2.5m on the northern side.

In terms of cyclist accessibility, cycle facilities are present along the R119 Monkstown Road. These connect to express routes to the city centre along both the Blackrock Road and Coast Road corridors – each approximately 10km in length to O'Connell Bridge. These major routes are subject to ongoing improvement as part of the implementation of the GDA Cycle Network Plan and the BusConnects programme.

The GDA Cycle Network Plan identifies the R119 Monkstown Road as a secondary route, Temple Hill/Stradbrook Road as a primary route to the west, and Carrickbrennan Road as a feeder route to the east.

Figure 17.2: GDA Proposed Cycle Network Plan

17.3.3 Public Transport

The proposed development site is highly accessible by public transport. It is within 500m (5 minute walk) of the Salthill and Monkstown Train Station. The DART suburban rail service connects directly to Connolly Station in Dublin City Centre, where it connects to the national rail network, as well as the Luas red line and the national bus network via BusÁras. The DART is a high frequency, high capacity regular service, operating at frequencies of up to 1 train every 10 minutes, with potential to further increase this in future.

The site also enjoys excellent accessibility by bus. Routes 7, 7a and 7d directly serve the site on the R119 Monkstown Road (connecting to Mountjoy Square at one end and Bride's Glen, Loughlinstown Wood, and Dalkey respectively at the other end). In addition, the 703 route connects the site directly to Dublin Airport. There is up to 1 bus every 12 minutes a peak times.

Various observations on site have indicated no difficulty boarding either buses or trains at any time of day. The site therefore enjoys excellent accessibility by public transport.

As part of the BusConnects programme, it is proposed to reorganise the bus services in the area. BusConnects is a programme of ongoing investment in Dublin's bus network, involving both the acquisition of additional buses and staff, and improvements to bus infrastructure.

The service improvements are being rolled out on an ongoing basis, with 5 of 11 phases already implemented and improvements in the Blackrock / Monkstown area planned for 2024. The earliest possible occupation date for the proposed development is 2025, by which time the revised service plan will be in place.

The following BusConnects routes will serve Monkstown Road:

- B3: Dun Laoghaire – City Centre – Tyrrelstown, with a frequency of 15 minutes;
- S8: Dun Laoghaire – Sandyford – Tallaght, with a frequency of 15-30 minutes;
- 98: Loughlinstown Drive – Dun Laoghaire – Mountjoy Square, with a frequency 60 minutes.

Figure 17.3: Proposed BusConnects Network.

17.3.4 Road Network

North of the Site is the R119 Monkstown Road, a regional road single carriageway with a 50km/hr speed limit. Monkstown Road from the proposed site connects to Monkstown Village to the east and Blackrock to the west.

Monkstown Road has a good road surface and includes advisory cycle lanes in both directions. The horizontal alignment of Monkstown Road from the proposed site is straight with the vertical profile being almost flat. The general layout of Monkstown Road along the frontage of the Purbeck Lodge T-junction is shown in Figure 17.4 and Figure 17.5 below.

Figure 17.4: Westbound View

Figure 17.5: Eastbound View

The road network close to the site is shown in Figure 17.6 below.

Figure 17.6: Surrounding Road Network

No new roads or significant road improvements are planned in the immediate vicinity of the subject site.

17.3.5 Existing Traffic Conditions

A traffic survey was undertaken by Traffinomics Ltd on Tuesday March 8th, 2022, at the Monkstown Road/Purbeck / Brighton Avenue junction and at the existing Dalguise House access at the Albany Avenue junction. The traffic counts were carried out over a 12-hour period between 7am and 7pm.

The traffic survey indicates the following periods represent the peak hours:

- AM Peak Hour: 08:00 – 09:00

- PM Peak Hour: 17:00 – 18:00

The traffic survey data was reviewed and has been summarised in Figure 8 and Figure 9 below. The summary shows the existing traffic volume for each movement during the peak hour, expressed in passenger car units (PCU's).

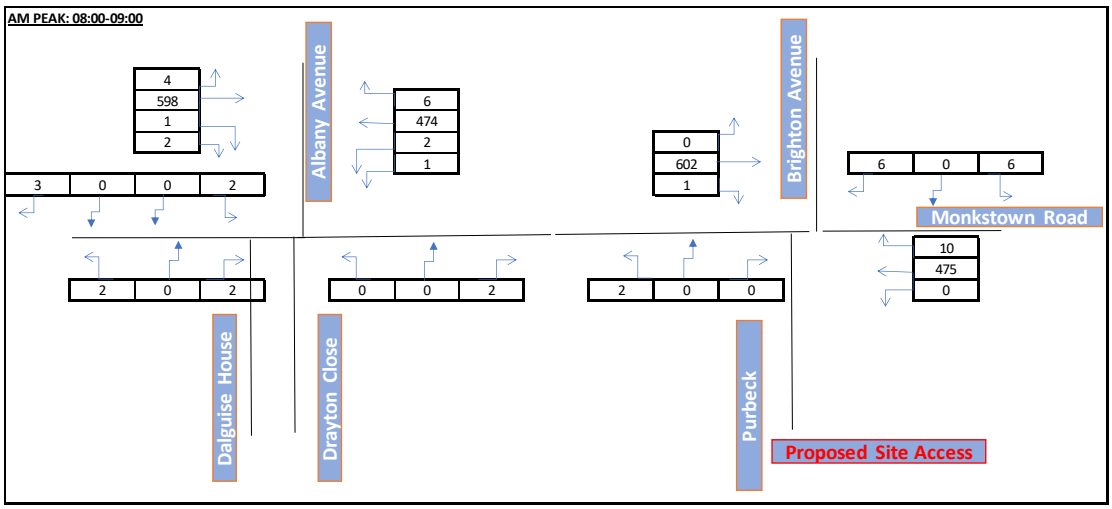


Figure 17.7: **AM Peak existing turning movements.**

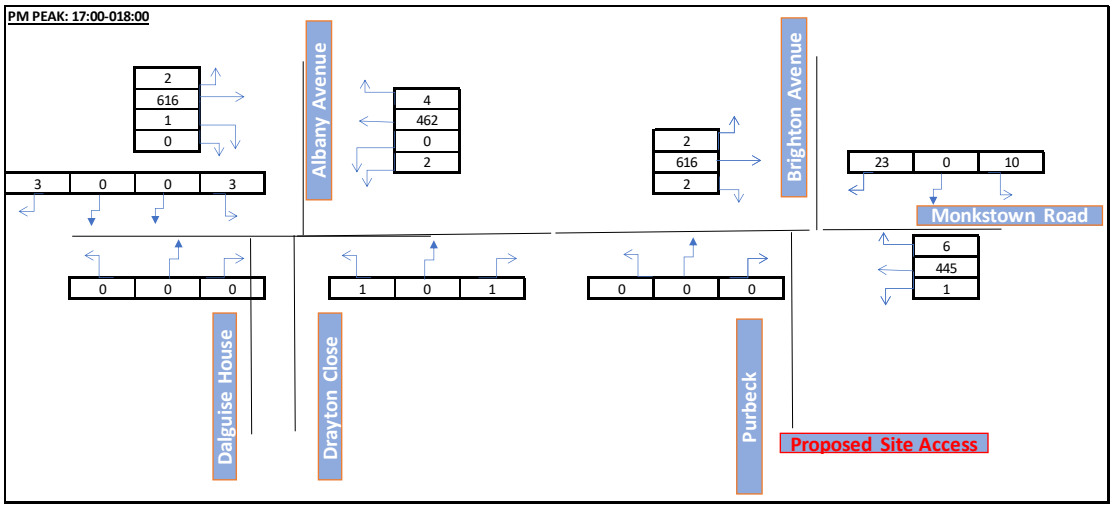


Figure 17.8: **PM Peak existing turning movements.**

The data above indicates modest existing traffic volumes on Monkstown Road (up to 11 cars per minute per direction) and very light traffic on the side roads (less than 1 car a minute). The higher eastbound flows reflect the closure of Seapoint Avenue in this direction.

The Annual Average Daily Traffic (AADT) of Monkstown Road has been calculated having regard to Unit 16.1 of the TII Project Appraisal Guidelies for National Roads, October 2016. The calculated existing AADT is 13,500. HGVs comprise 1.5% of traffic volumes on Monkstown

Road. Further detail is included in section 4.2 (Annual Average Daily Traffic) of the accompanying TIA Report.

17.4 Potential Impacts of the Proposed Project

17.4.1 Construction Phase

Typical construction working hours on site are expected to be as follows (or as otherwise conditioned by the planning authority / local authority):

- Mondays to Fridays – 8.00am to 7.00pm
- Saturday – 8.00am to 2.00pm
- Sundays and Public Holidays – No activity on site

A Construction and Environmental Management Plan (CEMP) incorporating management of construction traffic has been prepared for the proposed development and accompanies this EIAR. Various route proposals were assessed for accessing the construction site, however, it was decided that the route with the least impact on the adjoining road network would be the most prudent, as it would reduce conflict with other vehicles. The site adjoins the R119 Regional Road which connects to the R113 and thence the N31 to the M50 and the rest of the national road network. This is the route proposed for construction traffic between the site and the national road network. This means that all HGV movement associated with the construction stage of the proposed development [will be] required to only use the regional and national road networks to the north of the proposed development. This was discussed with Dún Laoghaire Rathdown County Council Transportation Department who confirmed that this arrangement would be preferred by the local authority.

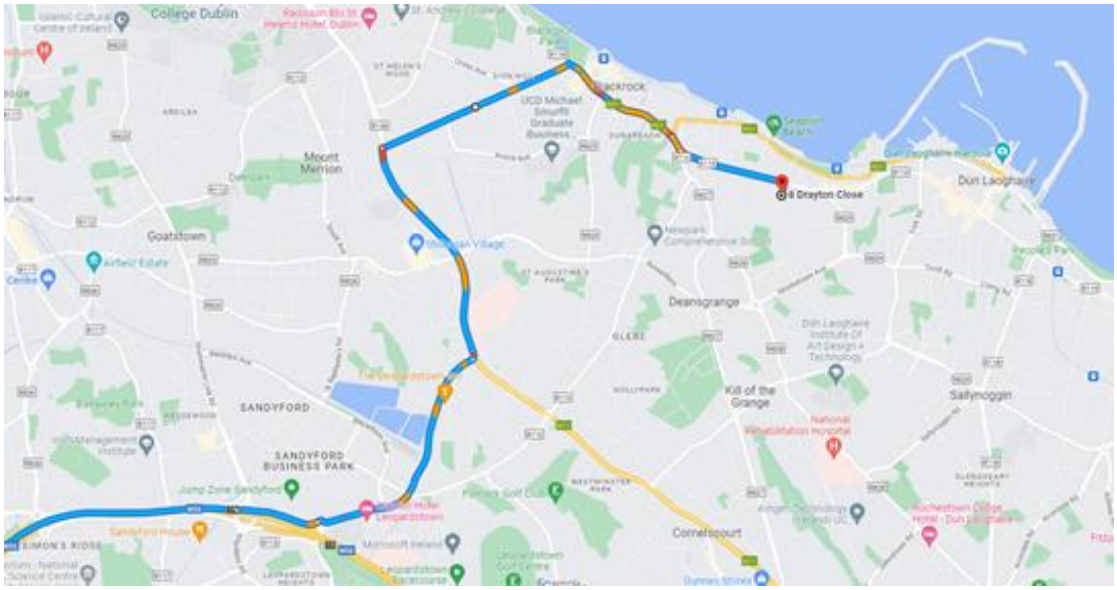


Figure 17.9: Proposed Haul Route for Construction Works

Based on the quantities of excavation and fill to be moved to or from the site, construction waste removal, and general site deliveries for the intended construction works, HGV traffic is

estimated to be a maximum of 10 movements per hour. It is projected that the works will result in approximately 150 to 200 construction workers on site during typical construction period, with a maximum of 400 construction personnel on site concurrently during short period of peak activity. Given typical construction working hours the majority of these personnel are expected to arrive to site in advance of the 08:00 – 09:00 morning peak hour and to depart before or after the 17:00 – 18:00 evening peak hour depending on the shift working pattern.

Some construction workers will arrive on foot, cycle or use public transport. In addition, many construction workers come to site in groups by car or van. Vehicular movements carrying construction personnel can be broken down as follows:

- 400 peak staff working on site (Max)
- 40% arrive during AM or PM Peak Hours = 160
- 30% arrive via public transport, walk or cycle = 48
- Total arrive via car/van = 112
- Average Car Occupancy = 2.2 (including driver)
- Maximum additional movements AM/PM Peak (400 staff) 51 cars/vans
- With up to 200 staff normally on site - Normal additional movements AM Peak 26 cars/vans

This volume of construction traffic estimated to be generated during peak traffic hours is lower than the peak volumes of non-construction traffic projected for the operational phase of the development. Beyond the bulk earthworks stage, other stages during construction are estimated to have lower HGV volumes and lower traffic volumes overall. The projected peak volume of construction traffic, including both truck and staff movements, is lower than the peak traffic volumes projected for the fully occupied development during the operational stage. Therefore, in Traffic Impact Assessment terms, the most onerous scenario to assess in terms of capacity and traffic impact is the operational stage of the development.

The likely effect of the proposed development during the construction phase will be:

1) Additional HGV traffic along the proposed designated haul route which will have a slight medium-term adverse effect on the local road network during the construction works.
2) Additional construction personnel car / light vehicle movements which will have a slight medium-term adverse effect on the local road network during the construction works.
3) Construction vehicle movements associated with the proposed development when undergoing service connections on the public road, which will have a slight short-term adverse effect on traffic movements on these roads in the vicinity of the proposed development.
4) Construction vehicle movements at the site access on Monkstown Road which will have a slight short-term adverse effect on pedestrian and cycle movements on these roads in the vicinity of the proposed development, for example due to pedestrians and cyclists having to give way at the construction access to the site and / or divert around construction works.

17.4.2 Operational Stage Traffic Projections for Proposed Development

ROD prepared estimates of the overall Traffic increases that would result from the proposed development. ROD has estimated trip generation figures for the proposed development based

on the site Travel Plan / Mobility Management Plan, their experience in Ireland and having regard to the range of trip rates from the Trip Rate Information Computer System (TRICS) database.

TII traffic growth factors have been applied to the external traffic to account for the net impact of other developments in the area. The TII traffic growth factors are based on regional modelling accounting for development intensification, as well as ongoing modal and temporal shifts in existing travel patterns. The application of these factors has been used to forecast overall traffic volumes in the Opening Year (2024) and Design Year (2039). The reduced car parking, below the CDP maximum standards is also likely to result in lower traffic movement associated with the completed development to that assumed in the TIA.

Projected Trip Generation for Proposed Development

The proposed development will generate an increased level of traffic on the local road network and demand for public transport. To calculate the likely increase in traffic volumes, trip rates were established for each proposed land use type and quantum with reference to the TRICS database. Using TRICS, ROD estimated the total number of vehicle trips each individual element of the development is likely to produce and combined to produce gross trip rates. These were then checked against the Travel Plan / Mobility Management Plan to ensure that they provide a robust basis for analysis, taking account of the implementation and active monitoring of the MMP.

The expected trip generation of the proposed development, as set out in the MMP and the TIA is described in the tables below. Section 6.3 (Travel Plan Details) of the MMP outlines the measures that will be implemented to achieve the expected trip generation and modal share. Table 17.1 below outlines the multi-modal trip generation that will be achieved with the implementation of the MMP. It is expected that up to 50% of residents will make an outbound trip in the AM Peak hour as outlined in section 5.2 (Trip Generation) of the accompanying TIA report:

Table 17.1: Multi-Modal Trip Generation following implementation of MMP

Mode	Existing Modal Share Monkstown Road	Proposed Development Modal Split	Number of Residents if maximum occupancy achieved
On Foot	8.11%	12.0%	85
Bicycle	12.16%	33.0%	233
Bus, minibus, or coach	12.16%	9.0%	63
Train, DART, or LUAS	16.22%	12.0%	85
Motorcycle or scooter	0.68%	0.8%	6
Car Driver	29.73%	18.0%	127
Car passenger	14.86%	5.0%	35

Mode	Existing Modal Share Monkstown Road	Proposed Development Modal Split	Number of Residents if maximum occupancy achieved
Van	0.00%	0.2 %	1[3]
Other (incl. lorry)	0.00%	0%	0
Work Mainly at or from home	2.70%	10%	71
Not stated	3.38%	0%	0

Table 17.2: Vehicular Trip Generation (AM Peak Hour)

Use	Trip Rate			No. Trips		
	Unit	Inbound	Outbound	Inbound	Outbound	Two-way
				(veh/hr)		
Apartment Units	/Dwelling	0.045	0.127	22	62	84
Childcare Facility	/100 Sqm	3.682	2.879	8	6	14
Restaurant/Cafe	/100 Sqm	1.691	0.520	5	1	6
Total				**35**	**69**	**104**

Table 17.3: Vehicular Trip Generation (PM Peak Hour)

Use	Trip Rate			No. Trips		
	Unit	Inbound	Outbound	Inbound	Outbound	Two-way
				(veh/hr)		
Apartment Units	/Dwelling	0.120	0.066	59	32	91
Childcare Facility	/100 Sqm	2.398	3.129	5	7	12
Restaurant/Cafe	/100 Sqm	2.670	1.481	6	3	9
Total				**70**	**44**	**112**

Vehicular Traffic Impact

Traffic impacts of less than 5% are defined as having a slight traffic impact. Traffic increased of 5% to 10% are defined as moderate traffic impact, which traffic greater that 10% increase defined as a significant traffic impact. The AADT of Monkstown Road in the Base Year (2022) has been calculated having regard to Unit 16.1 of the TII Project Appraisal Guidelines for National Roads, October 2016 as 13,500. This will increase to 14,000 by the Opening Year as a result of other developments in the area.

The TIA has calculated that the additional AADT associated with the proposed development is 1,350. This is equal to 9.6% of the Opening Year AADT and 8.9% of the Design Year AADT. The

[3] This assumes one resident might drive a van for work.

likely impact of the proposed development during the operational phase will therefore be negative, moderate and long-term in the immediate vicinity of the proposed development on Monkstown Road. This impact will dissipate on the wider road network, reducing with distance from the site.

The site will be accessed via two priority junctions on Monkstown Road, namely Purbeck and the Dalguise House Access Avenue. The basement car park (79% of peak car movements) will be accessed via Purbeck. For the purposes of robust assessment, this junction has been stress tested with 100% of the anticipated vehicular traffic generation. The two access junctions have similar geometric characteristics and the more critical is the Purbeck Junction. Therefore, demonstrating that this operates satisfactorily with 100% of the traffic amply demonstrates that both junctions will operate satisfactorily with the calculated traffic loading. The performance of the junction is detailed in the TIA, which demonstrates all arms operating well within capacity even in the Design Year.

Public Transport

As outlined in section 5.3 (Public Transport Capacity) of the TIA, the peak additional passenger loading onto the public transport system as a result of the proposed development is likely to be towards the city centre during the morning peak hour. As outlined in the MMP, the anticipated patronage for buses and trains in the morning is 63 and 85 respectively, of which 50% will be during the morning peak hour. During the morning peak hour, there will therefore be approximately 74 outbound movements to public transport. A little over half of these will be to the DART (c.42) and the rest by bus (c. 32). It is assumed that 90% of these movements will be towards the city centre (approx. 39 by DART and 29 by bus).

There is an inbound DART train every 10 minutes during the morning peak hour. Iarnród Éireann indicates that inbound capacity for the hour is 6,500 passengers to increase to 10,000 by 2027. As such, the anticipated loading from the proposed development is less than 1% of the DART's capacity (0.6% in 2022 and 0.4% in 2027), and therefore its impact on the DART public transportation system will be negligible.

In terms of bus movements, BusConnects proposed five services an hour to the city centre (4 x B3 plus 1 x 98), each with a capacity of 90 passengers, giving total passenger capacity of 450 per hour. The anticipated loading of 29 passengers per hour by bus equals 6.4% of this capacity. The BusConnects service plan is based on citywide multi-modal transport modelling, taking account of additional property development and population. Therefore, the impact of this additional passenger loading has been taken into account in the design of the future bus service network. The existing bus network, route number; 7, 7A, and 7D also has a combined frequency of 5 citybound services an hour on Monkstown Road during the morning peak hour, with the same capacity to cater for additional passengers even in the event of the rollout of BusConnects being delayed.

In summary, the local public transportation system has and will have adequate capacity to cater for the additional passenger loading associated with the proposed development.

Pedestrians and Cyclists

There will be an **increase** in the number of pedestrians and cyclists in the surroundings of the development. However, the area enjoys good pedestrian and cycle connectivity and there is ample capacity to absorb this increase.

17.5 Mitigation Measures

17.5.1 Construction Phase

In order to reduce the potential impacts described above, remedial and mitigation measures will be implemented as set out below and in the Construction and Environmental Management Plan included under a separate cover with this application.

RT_1: Tracked excavators will be moved to and from the Site on low-loaders and will not be permitted to drive onto the adjacent roadway.

RT_2: The applicant shall at all times keep all public and private roads and footpaths entirely free of excavated materials, debris and rubbish.

RT_3: Public roads outside the Site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.

RT_4: The applicant shall be responsible for and make good any damages to existing roads or footpaths caused by his own contractors or suppliers transporting to and from the Site.

RT_5: The contractor shall confine his activities to the area of the Site occupied by the works and the builders' compound, as far as practicably possible, during any particular phase of the works.

RT_6: All construction workers will be encouraged to use public transport, and also to car share where appropriate through the implementation of mobility management practices at the construction stage. On site staff car parking will also be provided to ensure no construction workers will be required to park on adjacent roads or streets.

RT_7: No daytime or night-time parking of site vehicles or construction staff vehicles will be permitted outside agreed areas.

RT_8: Construction work will be limited to normal working hours; that are 08.00 – 19.00 on weekdays and 08.00 – 14.00 on Saturdays. All deliveries of materials, plant and machinery to the Site and removals of waste or other material will take place within the permitted hours of work. Vehicle movements will be planned to ensure arrival and departure times are maintained inside the agreed working hours.

RT_9: Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (particularly to adjoining owners), and rush hour traffic. Large deliveries will be scheduled outside peak traffic hours to minimise disruption.

RT_10: Properly designed and designated access and egress points to the construction site will be used to minimise impact on external traffic.

RT_11: Firm, level, and well-drained pedestrian walkways will be provided.

RT_12: Adequate visibility will be provided at the proposed access point to the proposed development off Monkstown Road.

RT_13: Footpaths will not be blocked resulting in pedestrians having to step onto the carriageway.

RT_14: The final Construction Traffic Management Plan with be submitted and agreed with the local authority prior to commencement.

17.5.2 Operational Phase

The following traffic mitigation measures shall be implemented for the operational phase of the development:

RT_15: A Travel Plan / Mobility Management Plan has been prepared for the proposed development which includes mitigation measures to reduce usage of private cars and increase the use by residents and patrons within the development of more sustainable modes of travel, such as including good cycle parking provision, will further promote the greater use of sustainable travel modes. Successful implementation of the Travel Plan / Mobility Management Plan measures included will reduce the vehicular trip generation from the proposed development below that included for in the Transport Impact Assessment for the proposed development.
For further details refer to the accompanying TIA and MMP.

RT_16: A Stage 1 Road Safety Audit (RSA) was undertaken on the design to identify any design deficiencies. This has been responded to and the issues raised addressed. A Stage 2 RSA should be undertaken on the Detailed Design to ensure that the final design is in accordance with the TII Road Safety Audit Guidelines (December 2017) prior to the commencement of construction. A Stage 3 post construction and pre-opening of the proposed development in accordance with RSA guidelines to address any potential road safety issues related to the completed scheme.

RT_17: During the operational phase of the development, it is projected that the adjoining road network can readily accommodate the additional traffic from the proposed development.

RT_18: The impact on the DART system will be negligible and the impact on the bus system will be accommodated by the ongoing rollout of the BusConnects programme, which is designed to cater for increasing bus patronage across the city.

RT_19: Wider national, regional and local policy objectives combined with planned investment in sustainable travel modes will further mitigate the impact of the development over time.

17.6 Residual Impacts

17.6.1 Construction Phase

Due to the proposed mitigation measures outlined above, the impact of the proposed development will be negative, temporary and slight during the construction stage associated with the addition of a modest number of additional worker and truck trips on the road network.

17.6.2 Operational Phase

There will be a moderate increase in the use of the immediately adjacent road network by private vehicles as outlined in section 7.1 (Microsimulation Analysis) in the accompanying TIA report. This will dissipate with distance from the site.

There will be an increase in the number of pedestrians and cyclists in the surroundings of the development. However, the area enjoys good pedestrian and cycle connectivity and there is ample capacity to absorb this increase.

The impact of the development during the operational phase will be permanent, negative and slight.

17.7 Monitoring

17.7.1 Construction Phase

A Construction & Environmental Management Plan (CEMP) has been prepared and will be submitted with the application. The CEMP sets out the overarching vision of how the construction of the project will be managed in a safe and organised manner by the Contractor with the oversight of the Developer. The CEMP is a living document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIAR and any subsequent conditions relevant to the project. Further specific monitoring measures are set out below:

1) A site liaison officer will be identified as a single contact point for the local authority and local community to deal in a prompt and efficient manner with any issues that may arise in relation to construction traffic and activity on the public road.
2) Public roads outside the Site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.

17.7.2 Operational Phase

As part of the Travel Plan / Mobility Management Plan for the proposed development, a Mobility Manager will be appointed by the Management Company. The Mobility Manager will also be involved in monitoring of the modes of travel to and from the proposed development. This will be done on an annual basis. Monitoring of travel patterns will facilitate the provision of sustainable transport modes and ensure that modal targets are met and improved upon over time.

17.8 Interactions

17.8.1 Construction Phase

A Construction Traffic Management Plan will be put in place and agreed with the local authority which will minimise the traffic impact during construction stage. This will be coordinated with the wider Construction Environmental Management Plan to minimise Noise, Air Quality and Human Health impacts. The traffic impacts, which would also be temporary in

duration during construction are not considered to be significant due to the implementation of the mitigation measures identified in Section 17.5.1.

17.8.2 Operational Phase

The estimated 2022 Base Year, 2024 Opening Year and 2039 Design Year traffic volumes were provided to the EIAR Noise and Air Quality consultants as an input to their own separate EIAR assessments. Therefore, additional traffic from the proposed development may potentially have associated Noise and Air Quality impacts. A series of mitigation measures will be implemented to minimise the operational stage traffic impact of the proposed development, which includes the implementation of effective Travel Plan / Mobility Management Plan measures. Further details of the Air Quality and Noises 11 and 12 of thisassessments are set out in Chapter EIAR.

With regard to potential interactions with Human Health, the overall development has been designed in accordance with the Design Manual for Urban Roads and Streets (DMURS). In addition, significant improvements to the public realm are included in the overall design. The proposed pedestrian and cycle links through the proposed development would have significant long-term positive effects with regard to reduced walking and cycling travel times to public transport services and improved permeability and connectivity to amenities in the area. Further details of the Human Health assessment is set out in Chapter 7this EIAR.

17.9 Cumulative Impacts

17.9.1 Construction Phase Cumulative Impacts

The Construction and Environmental Management Plan, which is submitted with this application, describes the anticipated construction traffic generation associated with the proposed development. The potential construction traffic generation associated with other developments in the vicinity has been reviewed. Only developments using Monkstown Road have the potential for cumulative impacts, because beyond that, there is a major road network designed for large volumes of HGVs (as the HGV access route to Dún Laoghaire Port). Development at Richmond Cheshire Home (various applications for less than 100 residential units) near the site has potential to generate some coincident construction traffic. However, this development is far smaller in scale and its impact won't add considerably to the subject site's impact. Developments on Temple Hill will not use Monkstown Road and will not therefore have a cumulative impact on Monkstown Road. A proposed development at Cumberland Street (ABP31207021) is approximately one third the site of the proposed development, and may add 33% to the peak construction traffic movements on Monkstown Road.

The Applicant will liaise with the local authority to ensure that construction movements are managed having regard to potential concurrent activities on other nearby construction sites. Worker movements will not coincide with peak traffic hours, and HGV movements associated with the proposed development will be relatively infrequent, peaking at 10 an hour – see Section 17.4.1. The cumulative impact of the additional developments identified above would, at worst, increase this to 15 an hour if the peak construction traffic generation at the sites were to coincide (which is unlikely).

The volume of traffic to be generated is therefore modest and will not, in itself or in combination with other nearby developments, give rise to appreciable cumulative impacts on the surrounding road network.

17.9.2 Operational Phase Cumulative Impacts

Various other developments are proposed in the vicinity of the proposed development. Of these, only one is located along Monkstown Road (former Cheshire Homes site) and the scale of that development is modest (<100 apartments). Various other larger developments are proposed in the wider area and, similar to the proposed development, their traffic impact will dissipate across the network with distance from the site. The largest such development with scope for cumulative impact on the road network is at Cumberland Street, but that is a build to rent development with no car parking proposed.

Vehicular Traffic

The impact of other developments in the vicinity is captured by the application of TII growth factors to surveyed traffic volumes on the surrounding road network, which indicates increases of c. 4% per annum in background traffic volumes in the period to 2030, reducing thereafter. These figures also account for modal shift from existing car users towards more sustainable modes of transport, as the facilities available for these other modes improve with time. There is ongoing significant investment in bicycle, bus and train infrastructure, with ongoing increase in uptake of these modes.

Further, the impact of increased home-working in the aftermath of the Covid19 pandemic is not captured by these figures, and that has led to a general reduction in peak vehicular traffic flows on the road network.

Public Transport

The number of additional transport movements generated by new developments in the area is very low in comparison with the capacity of the DART network. Even the cumulative impact will be slight. In terms of buses, the BusConnects service plan is based on citywide multi-modal transport modelling, taking account of additional property development and population. Based on the existing service plans, the cumulative number of additional passengers would be more than 10% of the system's capacity, and therefore the impacts would be significant. However, the impact of this cumulative additional passenger loading has been taken into account in the design of the future bus service network and therefore these cumulative impacts will be slight to moderate.

Pedestrian and Cycle Facilities

There are good pedestrian and cycle facilities in the general vicinity of the site, with ample capacity to cater for all of the additional traffic growth associated with the various new developments in the region. The cumulative impacts in terms of these modes will be negligible.

17.10 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in the preparation of this Chapter of the EIAR. Traffic surveys were undertaken well after the lifting of movement restrictions associated with the Covid19 pandemic and present an accurate picture of baseline traffic conditions.

17.11 "Do Nothing" Effect

If the lands were to remain undeveloped then there would be no direct traffic impact on the surrounding area. However, not developing the lands would also represent a missed opportunity as the lands that are well located in an area well served by public transport. It would also undermine wider national policy objectives, that of delivering sustainable development in areas well served by sustainable travel modes and public transport.

17.12 Conclusion

The proposed development will not give rise to any significant impacts on the surrounding transportation network, either on its own or in combination with other developments. Mobility Management formed a cornerstone of the development masterplanning, and the managed development will be dominated by sustainable transport modes. The capacities of the existing vehicular, public transport and pedestrian / cycle networks have been assessed and have been found to be more than capable of accommodating the additional movements associated with the proposed development.

17.13 References

The following documents were consulted in the preparation of this Chapter of the EIAR.

- Dun Laoghaire Rathdown County Development Plan 2022 – 2028, Dun Laoghaire Rathdown County Council
- TII Project Appraisal Guidelines
- Transport Strategy for the Greater Dublin Area 2016 - 2035, National Transport Authority, 2016
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022
- National Development Plan 2018 – 2027, Department of Finance and Public Expenditure and Reform
- Project Ireland 2040 - National Planning Framework, Department of Housing, Planning and Local Government
- Regional Spatial & Economic Strategy
- Smarter Travel a Sustainable Transport Future – A New Transport Policy Document for Ireland 2009 –2020, Department of Transport, 2009

- Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities, Department of Housing, Planning and Local Government, 2020
- Traffic and Transport Assessment Guidelines, National Roads Authority / Transport Infrastructure Ireland, May 2014
- Transport in the Urban Environment, The Institution of Highways & Transportation
- Traffic Impact Assessment and Travel Plan (for Proposed Development), ROD, August 2022
- Construction and Environmental Management Plan (for Proposed Development), Byrne Looby, August 2022

18.0 MATERIAL ASSETS – WASTE MANAGEMENT

18.1 Introduction

This chapter evaluates the impacts, if any, which the proposed development may have on Material Assets as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU), the EPA Draft EIA Report Guidelines 2017 and EPA Draft Advice Notes for EIS 2015.

This chapter has also been prepared to address the issues associated with material assets during the construction and operational phases of the proposed development as described in Chapter 5.

This Chapter was prepared by David Doran and Chonaill Bradley of AWN Consulting. Chonaill Bradley is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science. He is an Associate Member of the Institute of Waste Management (CIWM). Chonaill has over seven years' experience in the environmental consultancy sector. David Doran is an Environmental Consultant with AWN Consulting with over 2 years' experience in the environmental sector. David has a MSc in Environmental and Energy Management (Hons) and is an Affiliate member of the Charted Institute of Waste Management. Recent projects include; Strategic Housing Development / Large Scale Residential Developments, office developments, logistics park developments and other residential, commercial and industrial developments. Inputs for these include EIA Screening Reports, Waste Management EIAR Chapters, Operational and C&D/Resource Waste Management Plans and Human Health EIAR Chapters.

A site-specific Resource & Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd to deal with waste generation during the construction phases of the Proposed Development and has been included as Appendix 18.1. The RWMP was prepared in accordance with the *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'* document produced by the Environmental Protection Agency (EPA) in 2021 in conjunction with the Department of Environment, Climate and Communications, Department of Housing, Planning and Local Government, Construction Industry Federation and Waste Enforcement Regional Lead Authorities.

A separate Operational Waste Management Plan (OWMP) has also been prepared by AWN Consulting Ltd. for the operational phase of the Proposed Development and is included as Appendix 18.2 of this Chapter.

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

These documents will ensure the sustainable management of wastes arising at the Development Site in accordance with legislative requirements and best practice standards.

18.2 Methodology

The assessment of the impacts of the Proposed Development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports. A summary of the documents reviewed, and the relevant legislation is provided in the RWMP and in the OWMP provided in Appendices 18.1 and 18.2.

This Chapter is based on the Proposed Development, as described in Chapter 5 (Description of the Proposed Project) and considers the following aspects:

- Legislative context;
- Construction phase (including demolition, site preparation and excavation); and
- Operational phase.

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the Construction and Operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the Proposed Development have been calculated. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and United States EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring proposed development. This information is presented in Section 18.5.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 9 of this EIAR (Land, Soils, Geology and Hydrogeology). Chapter 9 also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the Proposed Development.

18.2.1 Legislation and Guidance

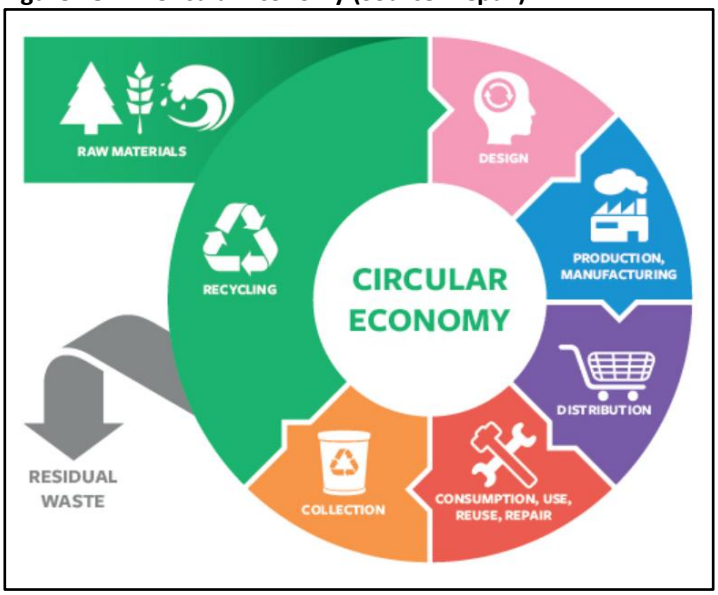
Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is

transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended), European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 18.1).

Figure 18.1 Waste Hierarchy (Source: European Commission)

EU and Irish National waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 18.2).

Figure 18.2 Circular Economy (Source: Repak)



The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, *Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland*, was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, *A Resource Opportunity,* in 2012.

One of the first actions to be taken from the WAPCE was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, using Less*' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's '*Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects*' (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* and C*onstruction and Demolition Waste Management: A Handbook for Contractors and Site Managers* (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the *Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021*, *BS 5906:2005 Waste Management in Buildings – Code of Practice*, the Dún Laoghaire-Rathdown County Council (DLRCC) *Dún Laoghaire-Rathdown County Council (Storage, presentation and Segregation of Household and Commercial Waste) Bye-Laws* (2019), DLRCC *Guidance Notes for Waste Management in Residential and Commercial Developments* (2020), *Guidance Notes for Environmental Design and Management of Construction Projects* (2022), the EPA *National Waste Database Reports 1998 – 2019* and the EPA *National Waste Statistics Web Resource*.

18.2.2 Terminology

Note that the terminology used herein is generally consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

Waste - Any substance or object which the holder discards or intends or is required to discard.

Prevention - Measures taken before a substance, material or product has become waste, that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products.

Reuse - Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse - Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

Treatment - Recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery - Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Disposal - Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Waste Framework Directive sets out a non-exhaustive list of disposal operations.

18.3 Baseline Environment

The Proposed Development consists of the demolition and part-demolition of existing structures (total demolition area 815 sq m) and the construction and provision of 491 No. residential units comprising: 3 No. two storey 2-bed terraced houses (GFA 569 sq m); 488 No. Build-to-Rent units, residential amenities and residential support facilities; a childcare facility; and restaurant/café on a c. 3.58 ha site at Dalguise House (Protected Structure RPS No. 870), Monkstown Road, Monkstown, Blackrock, County Dublin

In terms of waste management, the receiving environment is largely defined by DLRCC as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the EMR Waste Management Plan 2015 – 2021 (currently under review to be replaced in 2022), which sets out the following targets for waste management in the region:

A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;

Achieve a recycling rate of 55% of managed municipal waste by 2025; and

Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Plan sets a specific target for construction and demolition (C&D) waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.
Ireland achieved 84 per cent material recovery of such waste in 2019, and therefore surpassed the 2020 target and is currently surpassing the 2025 target. The National Waste Statistics update published by the EPA in November 2021 identifies that Ireland's current against "Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)" was met for 2020 at 51% however they are currently not in line with the 2025 target (55%).

The *Dún Laoghaire-Rathdown County Development Plan 2022 – 2028* also sets policies and objectives for the DLRCC area which reflect those set out in the regional waste management plan.

In terms of physical waste infrastructure, DLRCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the Eastern-Midlands Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

18.3.1 Characteristics Of the Proposed Development

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

18.3.2 Demolition Phase

There will be a quantity of waste materials generated from the demolition of existing structures on site, including the demolition and part-demolition of existing structures (total demolition area 815 sq m), including: White Lodge a 2 storey house (192 sq m); swimming pool extension to the southeast of Dalguise House (250 sq m); residential garage and shed to the southwest of Dalguise House (285 sq m); lean-to structures to the south of the walled garden (13 sq m); part demolition of basement area at Dalguise House (8 sq m); part demolition at the Coach House (67 sq m); removal of a glasshouse; and alterations to and removal of sections of the walled garden. The decommissioning and removal of an existing septic tank on site is also proposed.

Further detail on the waste materials likely to be generated during the demolition works are presented in the project-specific RWMP in Appendix 18.1. The RWMP provides an estimate of the main waste types likely to be generated during the demolition phase of the Proposed Development. The reuse, recycling, recovery and disposal rates have been estimated using the EPA National Waste Reports and these are summarised in Table 18.1.

Table 18.1 Estimated off-site reuse, recovery and disposal rates for demolition waste

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	44.0	0	0.0	85	37.4	15	6.6
Concrete, Bricks, Tiles, Ceramics	249.4	30	74.8	65	162.1	5	12.5
Plasterboard	19.6	30	5.9	60	11.7	10	2.0
Asphalts	4.9	0	0.0	25	1.2	75	3.7
Metals	73.4	5	3.7	80	58.7	15	11.0
Slate	39.1	0	0.0	85	33.3	15	5.9
Timber	58.7	10	5.9	60	35.2	30	17.6
Asbestos	1.2	0	0.0	0	0.0	100	1.2
Total	**490.2**		**90.2**		**339.6**		**60.4**

The decommissioning and removal of the septic tank will also constitute an additional <5 tonnes of concrete waste.

18.3.3 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be topsoil and subsoil generated from site clearance and excavations required to facilitate the construction of the basement, site levelling, construction of foundations, the installation of services and roads for the development and below ground services. Excavated material will be reused on site, where possible. It is currently envisaged that 15% (10,218m^3) of excavated material will be reused on site as fill or for landscaping. The volume of material to be excavated has been estimated by Byrne Looby at c. 68,123m^3. Whilst every effort will be made reuse excavated material onsite, it is expected that (85%) 57,904m^3 of this material will be removed from site for appropriate offsite reuse, recycling, recovery and/or disposal.

If the material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Article 27 classification (European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011). For more information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 18.1).

In order to establish the appropriate reuse, recycling, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018). Environmental soil analysis has been carried out on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste, including potential pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland or, in the unlikely event of hazardous material being encountered, be transported for treatment / recovery or exported abroad for disposal in suitable facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the Construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (Appendix 18.2). The RWMP provides an estimate of the main waste types likely to be generated during the Construction phase of the Proposed Development. These are summarised in Table 18.2.

Table 18.172 Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	215.4	10	21.5	80	172.3	10	21.5
Timber	182.7	40	73.1	55	100.5	5	9.1
Plasterboard	65.3	30	19.6	60	39.2	10	6.5
Metals	52.2	5	2.6	90	47.0	5	2.6
Concrete	39.2	30	11.7	65	25.5	5	2.0
Other	97.9	20	19.6	60	58.7	20	19.6
Total	**652.6**		**148.1**		**443.1**		**61.3**

18.3.4 Operational Phase

An Operational Waste Management Plan (OWMP) has been prepared for the Proposed Development by AWN and can be viewed in Appendix 18.2. The plan will ensure the development contributes to the targets outlined in the *EMR Waste Management Plan 2015 – 2021*. Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the Proposed Development are discussed in Section 18.5.

The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the houses, apartments, crèche and restaurant/café units during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-

recyclable waste (MNR), as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the Proposed Development for the main waste types, based on the AWN waste generation model (WGM), are presented in Tables 18.3 and 18.4, below, and are based on the uses and areas as advised by the Project Architects.

Table 18.173 Estimated waste generation for the development for the main waste types

Waste type	Waste Volume (m3/week)							
	3-bed house (individual)	Block A	Block B	Block C	Block D	Block E	Block F	Block G
Organic Waste	0.02	0.25	0.67	0.67	0.68	0.92	1.02	1.02
Dry Mixed Recyclables	0.14	1.71	4.60	4.60	4.98	6.49	7.25	7.25
Glass	0.00	0.05	0.13	0.13	0.13	0.18	0.20	0.20
Mixed Non-Recyclables	0.07	0.99	2.67	2.67	2.37	3.41	3.81	3.81
Total	**0.23**	**3.00**	**8.07**	**8.07**	**8.16**	**11.00**	**12.28**	**12.28**

Table 18.4 Estimated waste generation for the development for the main waste types

Waste type	Waste Volume (m3/week)						
	Block H	Block I1	Block I2	Block J	Coach House	Crèche	Restaurant /Cafe
Organic Waste	0.75	0.19	0.19	0.28	0.05	0.05	0.20
Dry Mixed Recyclables	5.31	1.36	1.36	1.96	0.33	1.65	0.47
Glass	0.14	0.04	0.04	0.05	0.01	0.01	0.01
Mixed Non-Recyclables	2.79	0.71	0.71	1.03	0.16	0.90	0.61
Total	**8.99**	**2.30**	**2.30**	**3.31**	**0.54**	**2.61**	**1.29**

18.4 Potential Impacts of the Proposed Project

18.4.1 Construction Phase

The Proposed Development will generate a range of non-hazardous and hazardous waste materials during demolition, site excavation and construction (See Appendix 18.1 for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored at a suitable location on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative.***

The use of non-permitted waste contractors or unauthorized waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts,

including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative.***

Wastes arising will need to be taken to suitably registered/permitted/licensed waste facilities for processing and segregation, reuse, recycling, recovery, and/or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the development site would be in line with the daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***.

There is a quantity of excavated material which will need to be excavated to facilitate the proposed project. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 9 (Land, Soils, Geology and Hydrogeology). Any suitable excavated material will be temporarily stockpiled for reuse as fill (although this is considered minimal due to the extents of the development across the site footprint), where possible, with remaining soil to be removed off-site for appropriate reuse, recycling, recovery and / or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. There exists a minor risk associated with the possibility of encountering contaminated soils during the de-commissioning and removal of the existing septic tank on site. In the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***.

18.4.2 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative***.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the

presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative.***

It is anticipated that waste contractors will be required to service the Proposed Development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative.***

18.5 Mitigation Measures

18.5.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the Proposed Development.

WM_1: As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects* (EPA, 2021), and is included as Appendix 18.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phases of the Proposed Development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 18.1) in agreement with DLRCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DLRCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.

A quantity of topsoil, sub soil, clay and made ground will need to be excavated to facilitate the Proposed Development. The project engineers, Byrne Looby, have estimated that 68,123m^3 of material will require excavation.

WM_2: Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, with remaining soil to be removed off-site for appropriate reuse, recycling, recovery and / or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that

will not impact negatively on workers as well as on water and soil environments, both on and off site.

In addition, the following mitigation measures will be implemented:

- **WM_3:** Building materials will be chosen with an aim to 'design out waste';
- **WM_4:** On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling, and recovery. The following waste types, at a minimum, will be segregated:
  - Concrete rubble (including ceramics, tiles, and bricks);
  - Plasterboard;
  - Metals;
  - Glass; and
  - Timber
- **WM_5:** Left over materials (e.g., timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible (alternatively, the waste will be sorted for recycling, recovery or disposal);
- **WM_6:** All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- **WM_7:** Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- **WM_8:** A Construction and Demolition Resource & Waste Manager (CDRWM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- **WM_9:** All construction staff will be provided with training regarding the waste management procedures;
- **WM_10:** All waste leaving site will be reused, recycled, or recovered, where possible, to avoid material designated for disposal;
- **WM_11:** All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted, or licenced facilities; and
- **WM_12:** All waste leaving the site will be recorded and copies of relevant documentation maintained.

WM_13: Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval should be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with the provisions of the Waste Management Act 1996 as amended, associated regulations and the Litter Pollution Act 1997 and the 'EMR Waste Management Plan 2015-2021'. It will ensure optimum levels of waste

reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

18.5.2 Operational Phase

As previously stated, a project specific OWMP has been prepared and is included in Appendix 18.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site.

WM_14: The operator / facilities management company of the site during the operational phases will be responsible for ensuring – allocating personnel and resources as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the Proposed Development.

WM_15: Residents in individual houses will be responsible for the implementation of the OWMP with regards to the management of their own waste.

In addition, the following mitigation measures will be implemented:

WM_16: The operator / facilities management company will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to):

- Organic waste;
- Dry Mixed Recyclables;
- Mixed Non-Recyclable Waste;
- Glass;
- Waste electrical and electronic equipment (WEEE);
- Batteries (non-hazardous and hazardous);
- Cooking oil;
- Light bulbs;
- Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
- Furniture (and from time-to-time other bulky waste); and
- Abandoned bicycles

- **WM_17:** The operator / facilities management company will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- **WM_18:** The operator / facilities management company will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- **WM_19:** The operator / facilities management company will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the Proposed Development during the operational phase is dealt with in compliance with the provisions of the Waste

Management Act 1996 as amended, associated regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan 2015 – 2021, *Guidance Notes for Waste Management Planning for Residential and Commercial Developments* (2022) and the DLRCC Waste Bye-Laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

18.6 Residual Impacts

The implementation of the mitigation measures outlined in Section 18.5 will ensure that high rates of reuse, recovery and recycling are achieved at the site of the Proposed Development during the construction and operational phases. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

18.6.1 Construction Phase

A carefully planned approach to waste management as set out in Section 18.5.1 and adherence to the RWMP (which includes mitigation measures) during the construction phase will ensure that the predicted effect on the environment will be ***short-term, imperceptible*** and ***neutral.***

18.6.2 Operational Phase

A carefully planned approach to waste management as set out in Section 18.5.2 and adherence to the OWMP (which includes mitigation measures) during the construction phase will ensure that the predicted effect on the environment will be ***short-term, imperceptible*** and ***neutral.***

18.7 Monitoring

The management of waste during the construction phase will be monitored by the contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the operator / facilities management company to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s).

18.7.1 Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring

that contractors and sub-contractors are segregating waste as required. If targets are not being met, the Resource Manager will identify the reasons for this and then work to resolve any issues. Recording of waste generation during the construction phase of the Proposed Development will enable better management of waste contractor requirements and identify trends. The data will be maintained to advise on future developments.

18.7.2 Operational Phase

During the operational phase, waste generation volumes will be monitored by the operator / facilities management company against the predicted waste volumes outlined in the OWMP. There may be opportunities to reduce the number of bins and equipment required in the waste storage areas, where estimates have been too conservative. Reductions in bin and equipment requirements will reduce the work load on staff involved with waste management and reduce waste contactor costs.

Table 18.5 Monitoring Proposals

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of waste Classification	An appointed Resource Manager will monitor all on-site waste segregation and classification
Unlicensed Waste Collection (Illegal Dumping)	The operator/ facilities management company will maintain waste receipts on-site for a period of 7 years and make available to DLRCC as requested.
Poor Waste Segregation	Waste generation volumes will be monitored by the operator / facilities management company
Litter Pollution	Waste storage areas will be monitored by the operator / facilities management company

18.8 Reinstatement

No reinstatement in proposed as part of the development.

18.9 Interactions

Adherence to the mitigation measures outlined in Section 18.5 will ensure that there are no significant impacts on resource or waste management from the Proposed Development. The management of waste during the construction phase in accordance with the RWMP and during the operational phase in accordance with the OWMP will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy.

18.9.1 Land and Soils

During the construction phase excavated material (c. 68,123m^3) will be generated from the excavations required to enable the construction of the basement, facilitate site levelling, construction of new foundations and the installation of underground services. It is estimated that 57,904m^3 of the excavated material will need to be removed offsite. Where material has to be taken off site it will be taken for reuse, recycling or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 9 (Land, Soils, Geology and Hydrogeology) and in the RWMP (Appendix 18.1), will ensure the effect **is long-term, imperceptible** and **neutral**.

18.9.2 Traffic and Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase and has been addressed in Chapter 17 Material Assets – Road and Traffic. Provided the mitigation measures detailed in Chapter 17 (Material Assets – Roads and Traffic) and the requirements of the OWMP (included as Appendix 18.2) are adhered to, the effects should be **short to long-term**, **imperceptible** and **neutral**.

18.9.3 Population and Human Health

The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that incorrect management of waste 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 OWMP and mitgiation measures outlined in section 18.5 relating to consturction waste, will ensure appropriate management of waste and avoid any negative impacts on the local population. ***long-term, imperceptible*** and ***neutral***.

18.10 Cumulative Impact

The following considers the cumulative impacts of the Proposed Development along with permitted and operating facilities in the surrounding area in relation to Material Assets Waste Management.

18.10.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap in the construction phase.

Developments that potentially could overlap during the construction phase:

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development	Distance to Dalguise House
D17A/0590+ABP-301533-18	Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	12th April 2018. Granted after appeal on 7th January 2019	Residential development consisting of the demolition of the existing nursing home and 5 no. studio apartments and the construction of a total of 56 no. residential units in 2 no. apartment blocks 76 car parking spaces, 5 motorcycle spaces and 41 bicycle spaces; 5 visitor car spaces and 26 bicycle spaces at surface level	Adjoining Dalguise House: < 50 metres
D19A/0378+ABP-305843-19	Former Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	05 Jun 2019. Granted after appeal on 26th May 2020	Permission for revisions to a residential development previously permitted under Reg. Ref. D17A/0590 / ABP-301533-18. 72 no. residential units in these 2 no. apartment blocks. 79 car parking spaces, 7 motorcycle spaces and 64 bicycle spaces	Adjoining Dalguise House: < 50 metres
ABP30380419	St. Teresa's House/Centre and St. Teresa's Lodge (Protected Structures), Temple Hill, Monkstown, Blackrock, Co. Dublin.	10th June 2019	294 no. apartments, conversion of St. Teresa's House, dismantling and relocation of St. Teresa's Lodge,	1.2 km
ABP31232521	3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin	14th April 2022	New residential and mixed use scheme of 493 residential units Including the subdivision, conversion and re-use of 'St. Teresa's House' the dismantling, relocation and change of use from residential to café of 'St. Teresa's Lodge' within the site development area.	1.2 km
ABP30887720	Former Europa Garage Site, Newtown Avenue, Blackrock, Co. Dublin	12th April 2021	Development of 101 no. apartments	1.3 km
D17A/0137	Newtown Avenue, Blackrock, Co. Dublin. This site is known as the 'Former Europa Garage site'	12th April 2017 (after appeal)	Demolition of the garage buildings on site. The residential scheme shall provide for 51 no. residential units	1.3 km

D21A/0958	Former Europa Garage Site, Newtown Avenue, Blackrock, Co Dublin	20th April 2022	Residential development providing 91 residential units	1.3 km
ABP-304682-19	Previously permitted Blocks 2 and 3, Cualanor, Glenageary, Upper Road, Co. Dublin.	30th August 2019	368 no. apartments and associated site works.	c.1.3km
ABP30894620	Lands adjacent and to the rear of Cluain Mhuire Family Centre, Newtownpark Avenue, Blackrock, Co. Dublin	15th April 2021	Demolition of a single storey shed, construction of 140 no. apartments	1.4 km
ABP-304249-19	Old School House, Eblana Avenue, Dun Laoghaire, Co. Dublin.	26th July 2019	Demolition of existing buildings on site, construction of 208 no. Build to Rent Shared Living Residential Development, cafe/kiosk and associated site works.	c.1.5km
ABP-308046-20	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	16th December 2020	Alterations to Phase 1 permission for 45 no. apartments from second to fourth floor permitted under Reg.Ref: D17A/0950 and ABP-300745-18 to include the provision of 57 no. additional apartments as an extension to Phase 1, the subject application relates to a total of 102 no. apartments.	c.1.85km
D21A/0706 + ABP -313240-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	Granted 15th March 2022. 3rd party appeal to ABP lodged 5th April 2022.	The proposal relates to a Phase 2A residential development of 41 no. apartments and the allocation of 60 no. car spaces.	c.1.85km
ABP30733220	Dean's Grange Road, Deansgrange, Co. Dublin	20th September 2020	Demolition of existing buildings, construction of 151 no. apartments	1.9 km
D18A/1184+ABP-305265-19	Junction of, Fleurville Road and, Newtownpark Avenue, and abutting, Annaville Avenue to the east, Blackrock, Co. Dublin	29th July 2019. Granted after appeal on 13th Feb 2020	Residential development consisting of 68 no. apartments	2 km

D22A/0070 + ABP-313363-22	Richmond Cheshire Home, Richmond Park, Monkstown, Co. Dublin	Planning Application Lodged 31st January 2022. Refused by DLRCC and is now subject of a first party appeal to ABP.	Residential development comprising of 96 no. apartment units	Adjoining subject site: <50 metres
N/A	Stradbrook/Sallynoggin Streams	Tender documents for a CCTV and flow survey have been prepared which is envisaged to be completed during winter 2021-2022.	Roughan & O'Donovan Consulting Engineers (ROD) has been commissioned by Dún Laoghaire – Rathdown County Council (DLRCC) to prepare Flood Alleviation Options (FAO) for the Stradbrook and Sallynoggin Streams.	Runs through subject site
ABP-314041-22	Lands located at and adjoining Stradbrook House, Stradbrook Road, Mountashton, Blackrock, Co. Dublin.	Planning Application lodged 11th July 2022	Demolition of the existing Stradbrook House and adjoining surface car park, and the construction of 108 No. Build-to-Rent residential senior living apartments	0.5 km
ABP31207021	The former Ted Castles site and Dun Leary House (a Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary	Planning Application Lodged 26th November 2021.	'Build to Rent' strategic housing development consisting of the construction of a new development of 146 no. units	1.4 km
D21A/1041	St. Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, County Dublin, A96 TN26	3rd Party Appeal lodged against decision to grant on 8/8/22.	Mixed use development of 88 no. Build to Rent residential apartments, commercial unit and café across 2 buildings.	1.4km
N/A	Deansgrange Stream	Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts	Improvements to the flood defence regime	1.6km at closest point

D21A/0996 + ABP-314429-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	3rd Party Appeal lodged against decision to grant on 22/08/22.	The proposal relates to a Phase 3 residential development of 98 no. apartments and all associated site works.	c.1.85 km

Due to the high number of waste contractors in the Dublin region as provided from the National Waste Collection Permit Office and the Environmental Protection Agency there will be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be ***short-term, imperceptible*** and ***neutral.***

18.10.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a **long-term, imperceptible** and **neutral**.

18.11 'Do-Nothing' Effect

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no demolition, excavation or construction at this site. Current or operational waste would continue to be generated at the same levels. There would, therefore, be a neutral effect on the environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely significant effects would be similar to this proposal.

18.12 Difficulties Encountered in Compiling the Chapter

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

There is a number of licensed, permitted and registered waste facilities in the Dublin and EMR regions and across Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

18.13 Conclusion

This chapter has discussed the potential and the predicted the impact of the Proposed Development with regards to waste management. These impacts have been considered for both the construction and operational phases of the Proposed Development. The cumulative impact of the Proposed Development and surrounding developments has also been considered.

Provided all mitigation measures as set out in this chapter and the attached appendices 18.1 (Resource & Waste Management Plan) and 18.2 (Operational Waste Management Plan) are implemented, the overall predicted impact of the proposed development is long-term, imperceptible and neutral.

18.14 References

- Waste Management Act 1996 as amended.
- Protection of the Environment Act 2003 as amended.
- Litter Pollution Act 1997 as amended
- Eastern Midlands Region Waste Management Plan 2015 – 2021 (2015).
- Department of Environment and Local Government (DoELG) Waste Management – Changing Our Ways, A Policy Statement (1998).
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022)
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021)
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)
- Department of Environment, Heritage and Local Government, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Dún Laoghaire-Rathdown County Council (DLRCC), County Council (Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2019).
- DLRCC, Guidance Notes for Waste Management in Residential & Commercial Developments (2020)
- DLRCC, Dún Laoghaire-Rathdown County Council Development Plan 2022-2028 (2022)
- BS 5906:2005 Waste Management in Buildings – Code of Practice
- Planning and Development Act 2000 (No. 30 of 2000) as amended
- Environmental Protection Agency (EPA), Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2015)
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
- EPA, European Waste Catalogue and Hazardous Waste List (2002)
- EPA, National Waste Database Reports 1998 – 2018.
- US EPA, Characterisation of Building Uses (1998);
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015)

19.0 MATERIAL ASSETS – BUILT SERVICES

19.1 Introduction

This chapter of the EIAR assesses the impacts of the proposed Large Residential Development (LRD) at the lands at Dalguise House, Monkstown, Co. Dublin on the Material Assets – Built Services, namely the Foul Drainage, Potable Water Supply, Electricity, Gas network and Telecommunications on the environment and the surrounding area. This chapter of the EIAR should be read in conjunction with the architectural and engineering drawings submitted as part of this planning application.

This chapter has been prepared by Maurice Ramsay, BA, BAI, MSc, CEng, FConsEI, Director of Metec Consulting Engineers. Maurice graduated with a Bachelor's Degree in Engineering in 1993 and a Masters Degree in Engineering in 1996 and has over 25 years of experience within in the consultancy side of the construction industry in Ireland. He has been involved in the preparation of EIAR documents for over fifteen years and is particularly familiar with the area in and around Dublin where many of his projects are located.

Inputs to all aspects concerning wet services have been provided by Jackelyn Wren, BA (Hons), AIEMA, Senior Environmental Specialist at ByrneLooby. Qualifications include Honours Bachelor of Arts Degree in Geography, and 8 years' professional experience in environmental impact assessment, environmental baseline surveying and compliance monitoring, sustainability appraisals and construction environmental management for a variety of schemes in different sectors (flood relief, major infrastructure, mixed use developments, wastewater treatment, desalination) in Ireland and the Middle East.

19.2 Methodology

The assessment of the potential impact of the proposed development on the water bodies was carried out according to the methodology specified by the EPA and the specific criteria set out in the Guidelines on Information to be Contained in an Environmental Impact Statement (EPA 2002 and 2017), EIA Directive, Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003), Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003), Development Management Guidelines (DoEHLG, 2007) and Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessments August 2018. The following sources of information were used in the completion of this assessment:

- Site Visits
- Site Investigation Report
- Civil Engineering Drawings Prepared by Byrne Looby Consulting Engineers
- Geological Survey of Ireland (GSI) online maps and databases
- ECFRAMS Flood Mapping from OPW
- EPA online maps and databases

- Topographical Survey
- Local authority record drawings
- ESB record drawings
- BGE record drawings
- EIR record drawings
- Virgin Media record drawings

All drainage (surface and foul) and water supply will be provided in accordance with the requirements of Dún Laoghaire-Rathdown County Council and with the following:

- Greater Dublin Regional Code of Practice for Drainage Works
- Greater Dublin Strategic Drainage Study (GDSDS)
- Planning System and Flood Risk Management Guidelines
- Building Regulations (Part H)
- Irish Water Standard Details and Codes of Practice for Water and Wastewater Infrastructure
- CIRIA SuDS manual C753 (2015).

This chapter also encompasses knowledge obtained from site visits, drainage and water services record information received from Irish Water and the Local Authority. Additionally, information from the EPA and GSI websites has been utilised. Metec contacted each electrical, comms and gas utility provider in order to determine the existing infrastructure in the area in and around the site.

19.3 Baseline Environment

19.3.1 Dry Services

Electrical Infrastructure:

The Monkstown area, including the adjoining estates, is served by a 10kV and 400 Volt Network as shown on Figure 19.3.1.1, with the site currently supplied with a low voltage connection from the Monkstown Road. A High Voltage Line is located on the near carriage of the Monkstown Road, connecting High Voltage stations across South Dublin.

Figure 19.3.1.1 ESB Networks Local Infrastructure

Gas Infrastructure:

The Monkstown area, and adjoining estates is served by a Low Pressure Network as shown on Figure 19.3.1.2, with the site currently supplied with a low pressure connection from the Monkstown Road.

Figure 19.3.1.2 Gas Networks Ireland Local Infrastructure

OpenEir Infrastructure:

The Monkstown area, including the adjoining estates, is served by a Fibre and Copper Network fed from local exchanges as shown on Figure 19.3.1.3, with Openeir duct infrastructure currently installed to the site boundary via the Purbeck scheme.

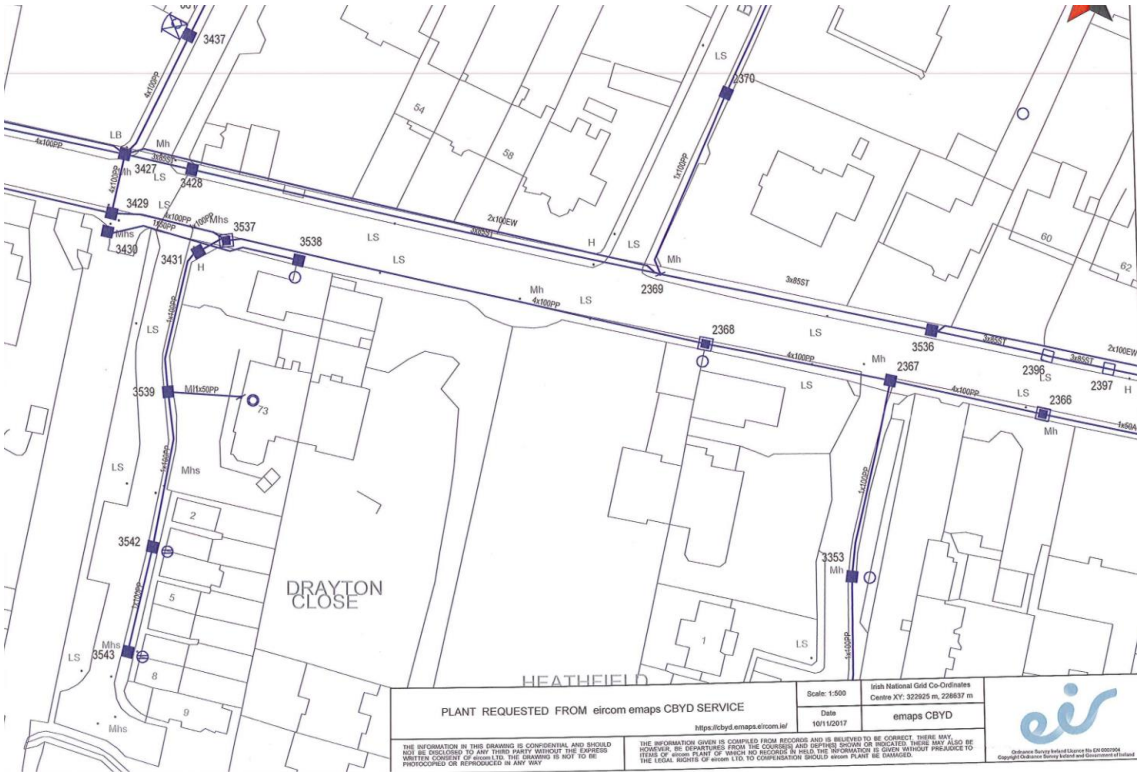


Figure 19.3.1.3 Openeir Local Infrastructure

Virgin Media Infrastructure:

The Monkstown area, including the adjoining estates, is served by a Fibre and Copper Network fed from local exchanges, with Virgin Media duct infrastructure currently installed to the site boundary via the Purbeck scheme.

19.3.2 Wet Services

Foul Infrastructure:

The wider area is served by the Ringsend Wastewater Treatment Plant, which has treated Dublin's wastewater since 1906 and is the largest plant in Ireland providing 40% of the Country's treatment capacity (water.ie). The plant includes secondary treatment with capacity PE of 1640000 (EPA Maps, 2022). There are no other EPA licenced waste-water treatment facilities within 10 km of the site.

The Irish Water service drawings identifies that a main combined sewer exists running under on the line of the Stradbrook/Monkstown Stream was obtained. The main is a 450mm diameter vitrified clay (VC) line flowing towards Carrickbrennan Road with an existing manhole for connection 1 at the Western end of the Purbeck Lodge and Dalguise House site

intersection while proposed connection 2 is adjacent western boundary to the Drayton Close estate.

A further 450mm diameter Irish Water/ DLRCC Vitrified Clay (VC) combined line exists, which runs from the Monkstown Valley development onto the application site, current entrance/exit roadway, and onto Monkstown Road, down Albany Avenue before connecting onto a main combined line on Seapoint Avenue.

Dalguise House is served by a separate septic tank and percolation area located in the lands outside to the Walled Garden on the western boundary. This will be removed during the construction phase.

Storm and Surface Water Assets:

The Irish Water drainage infrastructure maps of the surrounding areas of the Dalguise House site indicate that there is no specific separate surface water main in proximity to the development. These maps are referenced in the COF document appended to the ESR Document..

It is noted that the existing developed sites adjacent to the subject site have discharged surface water to the Stradbrook Stream located on the Northern boundary, using agreed controlled flows, set by the Local Authority, equivalent to, or less than undeveloped greenfield discharge Qbar as defined in the section 6.3.1.2.2 “River Regime Protection” of the Greater Dublin Strategic Drainage Study Volume 2 – New development and within Report 124 “Flood estimation for small catchments”,1994 produced by the Institute of Hydrology.

The current site surface water from the above existing areas is combined with the foul discharges and connected to an existing site septic tank or onto the existing 450 diameter vitrified clay Irish Water combined main from Monkstown Valley flowing down the existing site entrance roadway (beside Drayton Close) onto Albany Avenue.

Potable Water Supply:

Irish Water is responsible for managing and delivering water services to homes and businesses served by Public Water Supplies and Wastewater Agglomerations.

Potable water supply for Monkstown (as well as Blackrock, Booterstown, Clonkeen, Deansgrange, Dún Laoghaire Town, Foster’s Avenue, Roebuck, Oatlands, Orpen, Pottery Road and Stradbrook) is from the Stillorgan Reservoir (DLR Co Council, 2022). Stillorgan is a treated-water reservoir that receives water that has been processed in Ballymore Eustace or Vartry, before it is dispersed through the network of pipes to a total population of 200,000 people in South Dublin. It is located approximately 3km from the site.

There is an existing 160 dia. HPPE or equivalent, Irish Water water main on Monkstown Road this was located during a previous site walk over (12 January 2022) and has been confirmed by Irish Water.

19.4 Potential Impacts of the Proposed Project

19.4.1 Construction Phase

Dry Services:

There is currently minor dry infrastructure servicing the development-site, which served the existing buildings that are to be decommissioned and removed from site. This includes, but is not limited to: service ducting, ESB infrastructure, Gas and Telecoms infrastructure such as pipes, ducts, manholes and chambers.

The new development is likely to require new connections to all service providers which, although unlikely, may result in temporary disruption of existing services in the vicinity of the development in order to facilitate the connection but this disruption, if any, will be brief and not significant.

The approach to service installation is to maintain all dry services in the roadways and pathways as far as reasonably possible, avoiding tree routes where trees are to be retained. Services will need to access buildings and storage facilities where they will need to take a route through grassed areas periodically. There is not anticipated to be any indirect affects to these dry assets during the construction phase. All services being decommissioned are no longer in use and will not impact upon the utility service for surrounding residential areas. The impact is therefore assigned as 'imperceptible' under the EPA 2022 Guidelines for assessing environmental effects.

Wet Services:

There is currently minor wet infrastructure servicing the development-site, which served the existing buildings that are to be decommissioned and removed from site. This includes, but is not limited to: service ducting, water main and waste water infrastructure such as pipes, ducts, manholes and chambers.

The new development is likely to require new connections to all service providers as well as to public water supply and waste water networks which, although unlikely, may result in temporary disruption of existing services in the vicinity of the development; in order to facilitate the connection but this disruption, if any, will be brief and not significant.

The approach to service installation is to maintain all wet services in the roadways as far as reasonably possible. Services will need to access buildings and storage facilities where they will need to take a route through grassed areas periodically. It is proposed that all services in existing roadways or where there are existing trees in close proximity are to be installed using trenchless methods e.g pipe jacking, where there are new roads to be located, these services will be installed using open cut techniques. There is not anticipated to be any indirect affects to these wet assets during the construction phase. All services being decommissioned are no longer in use and will not impact upon the utility service for surrounding residential areas. The impact is therefore assigned as 'imperceptible' under the EPA 2022 Guidelines for assessing

environmental effects. There are however environmental impacts where open cut techniques are being employed to place the utilities. This is outlined further in Chapter 9 'Land, Soils, Geology and Hydrogeology'.

There exists a minor risk associated with the possibility of encountering contaminated soils during the de-commissioning and removal of the existing septic tank on site. Associated impacts and mitigation measures for this possibility are outlined in Chapter 9 'Land, Soils, Geology and Hydrogeology'.

19.4.2 Operational Phase

19.4.2.1 Proposed Infrastructure for the Development

Gas

As part of the development, a low-pressure gas distribution network shall be extended by Gas Networks Ireland from the existing gas supply network, to supply gas to the various tenant units proposed throughout the development. It is not proposed to supply gas services to individual residential units.

Electricity:

The development shall be supplied from the local ESB Networks Medium Voltage Network, which includes Medium Voltage Sub-Stations on Brighton Avenue and at Richmond Park. The development will be supplied from the Monkstown Road direction, with potential future linkage to the Richmond Park substation, and to locate 2 No. Substations within the development, one in Block E and one to the rear of the site in the vicinity of Block H. The location and ratings of Sub-Station shall be considered to satisfy architectural and engineering design freedom and also to satisfy the statutory requirements of ESB Networks.

Telecommunications:

All main roads / boulevards within the development shall contain ducting / cable ways and chambers as deemed necessary for the servicing of the site. The immediate surroundings of the site are currently serviced by Eir and Virgin Media infrastructure, which will be extended within the site to meet the needs of the development. Fibre-to-the-Home will be extended to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements.

Foul Infrastructure:

The Foul Drainage System for the site will be separated from the surface water network throughout the development. The required connection points will be as indicated in the figure below and have been approved by Irish Water.

Figure 0-1: Proposed Foul Sewer Connection Points

The proposed development is to consist of 491 units total, inclusive of childcare facility and cafe/restaurant. Based on Irish Water guidelines, the foul effluent generated will be based on:

⇒ flow l/day/apt x total units = DF l/day. ⇒ Average Domestic flow l/day per apartment (based on 2.7 persons per apartment x 150l/person/day.
⇒ Average Non-Domestic flow l/day per apartment (based on 2.7 persons per apartment x 60l/person/day.
⇒ flow l/sec Peak Flow (3 Domestic Flow and 4.5 Non-Domestic Flow)

The proposed basement car park will have a series of gullies and drainage channels cast into the floor slab which will cater for limited amounts of run-off that enters the proposed car park through ramps, service ventilation opes etc. and vehicles entry point. All basement drainage shall be collected in a separate collection chamber prior

to passing through a suitable petrol interceptor. This collection chamber will pump to the foul sewer system via duty and standby pumps. The proposed channels and gullies will be connected to a buried gravity pipe network that will be collected in a separate collection chamber prior to passing through a suitable petrol interceptor. This collection chamber will pump to the foul sewer system via duty and standby pumps

The existing septic tank on site will be de-commissioned and removed.

Storm and Surface Water Assets:

In accordance with Dún Laoghaire Rathdown County Council requirements, storm water shall be managed in two phases. The first is to restrict storm water run-off from the proposed development to greenfield run-off rates. The second aspect to be included in new applications is to incorporate sustainable urban drainage system ('SuDs') proposals into the scheme. The 'SuDs' concept requires that storm water quality is improved before disposal and, where applicable, storm water is discharged into the ground on site. The proposed surface water system within the site will be separated from the foul system as required.

The development will be served by a simple gravity drainage system (as far as reasonably possible) including Suds features (swales, permeable paving etc.) and will follow the natural topography of the site, falling towards the Stradbrook Stream on the Northern end of the site.

The aim of 'SuDs', inclusion across the development is to provide an effective system separate from the foul network to mitigate the adverse effects of storm water run-off on the environment, through enhanced quality systems and on local infrastructure to aid in preventing downstream flooding. The features proposed shall reduce runoff volumes, pollution concentrations and enhance groundwater recharge and biodiversity.

The proposed development 'SuDs' features shall consist of:

- Green/Blue-roof – this allows the roof areas of the proposed apartments to use a filter layer to direct rainfall events into a storage layer below.

- Permeable Paving – this system allows rainwater to be directed into car parking bays whereby the rainwater can filter through gaps in the paving blocks and percolate into the subsoil or to swales.

- Tree Pits – tree pits will be located along the existing avenue to capture runoff for the existing hard standing area.

- Swales – it is proposed to allow storm water to be directed locally into swales when the permeable paving is overflowing to delay storm water from entering the main drainage network.

- Attenuation Tanks – as noted above, for extreme storm events, a dedicated system to contain the storm water flows generated during a 1-in-100-year storm, increased by

20% for climate change are required by DLR. It is proposed to use underground storage tanks in three locations for this purpose.

- Low Water Usage Appliances – low water usage appliances should also be utilised to aid in the reduction of water usage on the development.

- Oil Separator – prior to final disposal of storm water from the development drainage network into the Stradbrook Stream (at two locations), the effluent will pass through an oil separator to remove any hydrocarbons which may have entered the network from car parking areas.

Potable Water Supply:

Aside from the connection to the existing 160mm diameter HPPE water main, Irish Water have also requested in the pre-connection enquiry a secondary connection to the southeast of the site, outside of the site boundaries to an existing 100mm dia uPVC water main, including the installation of a control valve and bulk meter. This connection is to remain closed during normal operations.

The estimated water usage for the existing and proposed Residential units with ancillary services is 302,509 litres/ day, with a provision for 24-hour storage.

The proposed development is to consist of 491 units, inclusive of childcare facility and cafe/restaurant based on Irish Water guidelines, the water demand will be:

⇒ Average Domestic Demand l/day/apt x total units = Demand l/day.
⇒ Average Domestic Demand l/day per apartment (based on 2.7 persons per apartment x 150l/person/day
⇒ Average Non-Domestic demand l/day per apartment (based on 2.7 persons per apartment x 60l/person/day
⇒ Demand l/sec Peak water demand (5 times average water demand).

Watermain works shall be strictly in accordance with the requirements of Irish Water Code of Practice for Infrastructure & Water Infrastructure Standard Details and any Dún Laoghaire Rathdown County Council requirements on specifications and standard details.

19.4.2.1 *Potential Impacts*

Dry Services:

The new development will lead to an increase in the demand on the local power supply network. However, ESB Networks continually upgrade and extend their networks to meet demand, and a new Medium Voltage supply will be taken into the site from the Monkstown Road to independently supply the site.

The new development will lead to an increase in the demand on the local gas supply network. However, Bord Gais continually upgrade and extend their networks to meet demand, and a new low pressure supply will be taken into the site from the Monkstown Road, to independently supply the site. In addition, it is not proposed to supply gas services to any residential unit, therefore the impact could be deemed imperceptible.

The new development will lead to an increase in the demand on the local Telecoms supply network. However, both OpenEir and Virgin Media continually upgrade and extend their networks to meet demand, and new Fibre supplies will be taken into the site from the Purbeck development infrastructure to independently supply the site. The impact will therefore be imperceptible.

Wet Services:

The implementation of 'SuDs' across the development will provide an effective system separate from the foul network to mitigate the adverse effects of storm water run-off on the environment, through enhanced quality systems and on local infrastructure to aid in preventing downstream flooding. The features proposed shall reduce runoff volumes, pollution concentrations and enhance groundwater recharge and biodiversity. The impact is therefore considered to be positive.

Basement and undercroft car parking areas on site will discharge to the foul system via a petrol interceptor to prevent pollution from accidental oil spills. This would again be considered a positive impact.

The development will result in an increase in the wastewater discharged from the site to the public sewer system. The foul outflow from the site will be directed to the municipal treatment plant at Ringsend. Upgrade works are needed as the plant is not currently meeting its requirements under the Urban Wastewater Treatment Directive and increased outflow from development such as the proposed development will increase loading on the Ringsend Waste Water Treatment Plant (WWTP). However, planning permission has recently been granted, under Bord Order ABP-301798-18 for an expansion to the WWTP at Ringsend which will increase network capacity by 50%. Irish Water have also confirmed feasibility for connection of the proposed development to the existing public sewer system subject to controlled flow provisions on the new development. Therefore, any impact from the increased wastewater flows on the existing drainage network will be temporary and not significant.

The new development will lead to an increase in the water supply demand on the public water supply network, however Irish Water has confirmed that there is capacity in the system to take additional demand. The impact is therefore imperceptible.

19.5 Mitigation Measures

19.5.1 Construction Phase

BS_1: A method statement for all works to be carried out will be prepared by the contractor and agreed with DLRCC prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works.

BS_2: Dewatering measures will only be employed where necessary.

BS_3: Tree-root protection and inclusion zones are proposed where minor services are required for site lighting.

BS_4: All major service routes have been designed to run on one side of the main access avenue, to avoid trees identified for retention. In addition, the proposed basement will be used as a service route between the front part of the site and the rear blocks (H-I).

BS_5: All new-build service infrastructure is to be designed in accordance with the relevant service provider and asset owner's code of practice, which require due cognisance of the receiving environment. Design depths of proposed infrastructure are to be optimised so that excessive excavations are avoided where possible, and by association a reduction in resultant waste and machinery operation time. It is proposed that products and materials are supplied locally, where practicable and available; in order to reduce carbon footprint of travel and production.

BS_6: The following mitigation measures will be implemented for the construction phase of the development:

- Consultation with relevant services providers in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are implemented for works in the vicinity of services such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution watermains.
- Neighbouring sites are to be advised of construction methodologies in advance of works, in situations which may affect them.
- Protection in place of all underground services for which diversions are not required.
- All decommissioned infrastructure will be sent to an accepting landfill for disposal.
- Construction methods used by the contractor are to be tailored to reduce, where possible, dust noise and air pollution; to minimise interference with the environment and the neighbouring areas.
- Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility.

- All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.
- Potable water supply networks and waste water infrastructure are to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Irish Water Requirements.
- Connections to the service providers are to be carried out to the approval and / or under the supervision of the Local Authority or relevant utility service provider, prior to commissioning.
- All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase.
- Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption.
- All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority.
- Where possible, trenchless techniques should be used for the placement of service utilities, to avoid contamination of sub-soils and groundwater.

BS_7: An appropriate Remediation Plan should be put into place for the de-commissioning and removal of the existing septic tank on site, in the event that contaminated soils are encountered on site. Further mitigation with regards to the treatment of hazardous and contaminated materials is outlined in Chapter 9 'Land, Soils, Geology and Hydrogeology'.

19.5.2 Operational Phase

BS_8: The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice will in an attempt to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services. Any additional mitigation measures required for the proposed built services, if required, during the operational phase will be as advised by the relevant service provider.

BS_9: Use of water conservation measures will be included as part of the design development, including dual flush water cisterns, low flow taps etc.

19.6 Residual Impacts

19.6.1 Construction Phase

Residual impacts on the built services during the construction phase are considered to be temporary and occasional in nature and not significant, where service is unavoidably disrupted to facilitate the construction phase.

19.6.2 Operational Phase

Residual impacts on the built services during the operational phase given the new infrastructure and upgrades to the existing networks are considered to be permanent with a constant occurrence, positive and beneficial to all the end users.

19.7 Monitoring

19.7.1 Construction Phase

All potable water will be cleaned and tested to the satisfaction of Dún Laoghaire Rathdown County Council prior to the connection to the public potable water. In addition, all connections to the public potable water and foul water sewer will be carried out under the supervision of Dún Laoghaire Rathdown County Council.

All new infrastructure, which is to serve the proposed development, is to be routinely inspected with any maintenance carried out, as required. Any monitoring of the built services required during the operational phase of the proposed project will be as advised by the relevant services providers.

19.7.2 Operational Phase

Monitoring of the system will be undertaken by Irish Water to ensure that the foul water and potable water systems are maintained. ESB Networks, Bord Gais and Telecoms companies also continually monitor their networks for faults, and also operate fault reporting systems.

19.8 Reinstatement

Any temporary disturbance to the existing topography to accommodate the installation of pipes, ducts, culverts, chambers, manholes etc. for the purpose of servicing the site will be fully reinstated to grass where not proposed to be covered by roadways. A full landscaping scheme is proposed, to include grass areas, wildflower meadows, flower and tree planting.

19.9 Interactions

The design team has been in regular contact with each other throughout the design process to consider and minimise environmental impacts where possible and to ensure a sustainable and integrated approach to the design of the proposed development.

19.9.1 Public Health There is the potential for public health issues to arise due to the contamination of the surrounding water service networks due to the construction works. There is a potential for disruption to services due to accidents on site during the construction process. If the proposed mitigation measures are applied during the construction process, then the danger to public health will be negative, significant, and short term.

19.9.2 Any Other Applicable There are interactions between material assets (built services) and the land, soils, geology, and hydrogeology. During the installation process of the necessary built services, excavations will be required. These excavations will be limited in their depth and therefore any impact they have on the land, soils, geology, and hydrogeology will be negative, imperceptible, and temporary. There are interactions between material assets (built services) and biodiversity. This is identified on the basis that during the construction phase of development, there is the potential for impacts on local biodiversity and downstream impacts on proximate watercourses and designated sites via excavation and installation works during the proposed implementation of infrastructure throughout the site. During the operational phase of development, there is a direct hydrological pathway to designated conservation sites located within Dublin Bay via surface water drainage. There is an indirect hydrological pathway to designated conservation sites located within Dublin Bay via the proposed outfall of foul wastewater drainage to Ringsend WWTP.

19.10 Cumulative Impacts

We understand that Irish Water considered cumulative impacts to their water supply in their network capacity assessment (foul drainage and water supply), this is described in their COF document issued in September 2022. Other service providers also considered network capacity. Surface water discharge from the site will be controlled to the greenfield run-off rate Q-Bar with the use of SUDs measures, therefore there should be no cumulative impact on the receiving environment (surface sewers and watercourse). Below is a list of proposed developments in the surrounding area.

Committed (Permitted/ Under Construction) Projects

The below projects have been granted planning permission by Dún Laoghaire-Rathdown County Council (DLRCC) or An Bord Pleanála (ABP) within the last 5 years (2017-2022). Each of these projects represent developments which consist of 50 residential units or more. These represent both mixed-use and residential developments, granted either through Section 34 process directly to DLRCC, through Strategic Housing Development (SHD) applications directly to ABP, or granted by ABP following either first- or third-party appeals. This list includes applications within a 2km radius of the subject site at Dalguise House.

DLRCC/ ABP Reg. Ref.	Address	Decision Date	Overview of Development	Distance to Dalguise House
D17A/0590+ABP-301533-18	Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	12th April 2018. Granted after appeal on 7th January 2019	Residential development consisting of the demolition of the existing nursing home and 5 no. studio apartments and the	Adjoining Dalguise House: < 50 metres

			construction of a total of 56 no. residential units in 2 no. apartment blocks 76 car parking spaces, 5 motorcycle spaces and 41 bicycle spaces; 5 visitor car spaces and 26 bicycle spaces at surface level	
D19A/0378+ABP-305843-19	Former Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	05 Jun 2019. Granted after appeal on 26th May 2020	Permission for revisions to a residential development previously permitted under Reg. Ref. D17A/0590 / ABP-301533-18. 72 no. residential units in these 2 no. apartment blocks. 79 car parking spaces, 7 motorcycle spaces and 64 bicycle spaces	Adjoining Dalguise House: < 50 metres
ABP30380419	St. Teresa's House/Centre and St. Teresa's Lodge (Protected Structures), Temple Hill, Monkstown, Blackrock, Co. Dublin.	10th June 2019	294 no. apartments, conversion of St. Teresa's House, dismantling and relocation of St. Teresa's Lodge,	1.2 km
ABP31232521	3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin	14th April 2022	New residential and mixed use scheme of 493 residential units Including the subdivision, conversion and re-use of 'St. Teresa's House' the dismantling, relocation and change	1.2 km

			of use from residential to café of 'St. Teresa's Lodge' within the site development area.	
ABP30887720	Former Europa Garage Site, Newtown Avenue, Blackrock, Co. Dublin	12th April 2021	Development of 101 no. apartments	1.3 km
D17A/0137	Newtown Avenue, Blackrock, Co. Dublin. This site is known as the 'Former Europa Garage site'	12th April 2017 (after appeal)	Demolition of the garage buildings on site. The residential scheme shall provide for 51 no. residential units	1.3 km
D21A/0958	Former Europa Garage Site, Newtown Avenue, Blackrock, Co Dublin	20th April 2022	Residential development providing 91 residential units	1.3 km
ABP-304682-19	Previously permitted Blocks 2 and 3, Cualanor, Glenageary, Upper Road, Co. Dublin.	30th August 2019	368 no. apartments and associated site works.	c.1.3km
ABP30894620	Lands adjacent and to the rear of Cluain Mhuire Family Centre, Newtownpark Avenue, Blackrock, Co. Dublin	15th April 2021	Demolition of a single storey shed, construction of 140 no. apartments	1.4 km
ABP-304249-19	Old School House, Eblana Avenue, Dun Laoghaire, Co. Dublin.	26th July 2019	Demolition of existing buildings on site, construction of 208 no. Build to Rent Shared Living Residential Development,	c.1.5km

			cafe/kiosk and associated site works.	
ABP-308046-20	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	16th December 2020	Alterations to Phase 1 permission for 45 no. apartments from second to fourth floor permitted under Reg.Ref: D17A/0950 and ABP-300745-18 to include the provision of 57 no. additional apartments as an extension to Phase 1, the subject application relates to a total of 102 no. apartments.	c.1.85km
D21A/0706 + ABP -313240-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	Granted 15th March 2022. 3rd party appeal to ABP lodged 5th April 2022.	The proposal relates to a Phase 2A residential development of 41 no. apartments and the allocation of 60 no. car spaces.	c.1.85km
ABP30733220	Dean's Grange Road, Deansgrange, Co. Dublin	20th September 2020	Demolition of existing buildings, construction of 151 no. apartments	1.9 km
D18A/1184+ABP-305265-19	Junction of, Fleurville Road and, Newtownpark Avenue, and abutting, Annaville Avenue to the east, Blackrock, Co. Dublin	29th July 2019. Granted after appeal on 13th Feb 2020	Residential development consisting of 68 no. apartments	2 km

Planned Projects

The below projects are planned projects that are at various stages of the planning process. The key distinction from the projects listed above is that they do not have planning permission at the time of writing. Each of these projects represent developments which consist of 50

residential units or more. These represent both mixed-use and residential developments, granted either through Section 34 process directly to DLRCC, through SHD applications directly to ABP, or granted by ABP following either first- or third-party appeals. This list includes applications within a 2km radius of the subject site at Dalguise House.

DLRCC/ ABP Reg. Ref.	Address	Lodgement Date/ Status	Overview of Development	Distance to Dalguise House
D22A/0070 + ABP-313363-22	Richmond Cheshire Home, Richmond Park, Monkstown, Co. Dublin	Planning Application Lodged 31st January 2022. Refused by DLRCC and is now subject of a first party appeal to ABP.	Residential development comprising of 96 no. apartment units	Adjoining subject site: <50 metres
N/A	Stradbrook/Sallynoggin Streams	Tender documents for a CCTV and flow survey have been prepared which is envisaged to be completed during winter 2021-2022.	Roughan & O'Donovan Consulting Engineers (ROD) has been commissioned by Dún Laoghaire – Rathdown County Council (DLRCC) to prepare Flood Alleviation Options (FAO) for the Stradbrook and Sallynoggin Streams.	Runs through subject site
ABP-314041-22	Lands located at and adjoining Stradbrook House, Stradbrook Road, Mountashton, Blackrock, Co. Dublin.	Planning Application lodged 11th July 2022	Demolition of the existing Stradbrook House and adjoining surface car park, and the construction of 108 No. Build-to-Rent residential senior living apartments	0.5 km

ABP31207021	The former Ted Castles site and Dun Leary House (a Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary	Planning Application Lodged 26th November 2021.	'Build to Rent' strategic housing development consisting of the construction of a new development of 146 no. units	1.4 km
D21A/1041	St. Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, County Dublin, A96 TN26	3rd Party Appeal lodged against decision to grant on 8/8/22.	Mixed use development of 88 no. Build to Rent residential apartments, commercial unit and café across 2 buildings.	1.4km
N/A	Deansgrange Stream	Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts	Improvements to the flood defence regime	1.6km at closest point
D21A/0996 + ABP-314429-22	Frascati Centre, Frascati Road, Blackrock, Co. Dublin.	3rd Party Appeal lodged against decision to grant on 22/08/22.	The proposal relates to a Phase 3 residential development of 98 no. apartments and all associated site works.	c.1.85 km

19.10.1 Construction Phase

There may be construction being undertaken on the above-mentioned sites in the vicinity of the proposed development when it is under construction. It is anticipated that each site will be managed under an individual construction and demolition plan. As such, no cumulative impacts will arise that would result in significant effects on the environment.

19.10.2 Operational Phase

All proposed developments are required to submit a Pre-connection Enquiry form to Irish Water, for the foul water effluent and potable water supply. Irish Water confirm that there will be no cumulative operational negative affects by issuing their Letter of Confirmation of Feasibility. The other service providers also carry out network assessments.

19.11 'Do-Nothing' Effect

Under a 'do-nothing' scenario there would be no increase in demand on public services in the vicinity of the site.

19.12 Difficulties Encountered in Compiling the Chapter

No difficulties were encountered in completing this section.

19.13 Conclusion

The Chapter has outlined the existing provision of Power, Telecommunications, Gas, Water, Foul and Surface Water Drainage services in the general area of Monkstown Road and Dalguise House. Estimates are provided of the expected levels of utility usage by the proposed development and the impact these have on the receiving waters or local utility capacity, which are imperceptible and in line with expectations associated with appropriate residential development.

19.14 References

- Guidelines on the information to be contained in Environmental Impact Statements (EPA 2022) and Advice Notes on Current Practice in the preparations of Environmental Impact Statements (EPA 2003)
- BS EN 752:2008 "Drain and Sewer Systems outside Buildings"
- Part H of the Building Regulations
- Greater Dublin Strategic Drainage Study
- Ciria C697 "The SUDS Manual"
- Sewers for adoption: 6th Edition
- BS EN 752:2008 "Drain and Sewer Systems outside Buildings"
- Dún Laoghaire Rathdown County Council Water Main Map.
- Utility Company Records
- EIA Directive
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003)
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003)
- Development Management Guidelines (DoEHLG, 2007)
- Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessments August 2018

20.0 INTERACTIONS

20.1 Introduction

This Chapter of the EIAR has been prepared by Tom Phillips + Associates and deals with likely interactions between effects predicted as a result of the proposed development.

In addition to the requirement under the *Planning and Development Regulations 2001 (as amended)* to describe the likely significant effects of the proposed development on particular aspects of the environment, it is also required to consider the interaction between impacts on different environmental factors. As such, these are assessed below.

The interaction of effects within the Proposed Development in respect of each of the environmental factors, listed in Article 3(1) of the EIA Directive, has been identified and addressed in the respective chapters in this EIAR. This chapter presents an overview of these interactions of impacts, from the Proposed Development, between the various environmental factors.

This Chapter outlines the areas where potential interactions may arise as a result of the proposed development.

The potential cumulative impact of the proposed development with committed or planned development projects in the surrounding area is also recognised as an interaction between potential environmental impacts. Cumulative impact has been addressed in detail in Chapter 21 below.

20.2 Description of Potential Interactions

All aspects of the environment are likely to interact to some extent and to various degrees of complexity. The likely significant interactions between factors arising from the proposed development are set out in the matrix provided as Table 20.1 below.

Table 20.1: summary of interactions between effects predicted as a result of the proposed development

Interactions Between Environmental Factors												
	Population & Human Health	Biodiversity	Land, Soils, Geology and Hydrogeology	Hydrology	Air Quality/ Climate	Noise & Vibration	Landscape & Visual	Architectural Heritage	Cultural Heritage and Archaeology	Roads and Traffic	Waste	Built Services
Population & Human Health			✓	✓	✓	✓	✓			✓	✓	✓
Biodiversity			✓	✓		✓	✓	✓			✓	✓
Land, Soils, Geology and Hydrogeology				✓	✓			✓	✓		✓	✓
Hydrology								✓				
Air Quality/ Climate										✓		
Noise & Vibration										✓		
Landscape & Visual									✓			
Architectural Heritage									✓			
Cultural Heritage and Archaeology												
Roads and Traffic											✓	
Waste												
Built Services												

20.2.1 Interactions between *Population and Human Health* and *Land, Soils, Hydrology and Hydrogeology*

As set out in Chapter 7, 9, and 10 there is the potential for public health issues to arise due to the potential contamination of the land and soils due to the construction works. With the application of the proposed mitigation measures during the construction process, (as outlined in Section 10.5), along with good site management and construction practices will eliminate any significant impact on the environment and reduce significance to 'imperceptible' in all cases.

20.2.2 Interactions between *Population and Human Health* and *Air Quality and Climate*

As set out in Chapter 7 and 11, there is potential for interaction between population, human health and air quality on the basis that an adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore with mitigation measures it is considered that there will be no residual impact to human health arising from air quality impact during the construction or operational phase of development.

20.2.3 Interactions between *Population and Human Health* and *Noise and Vibration*

As set out in Chapter 7 and 12, there is potential for population, human health and noise arising from noise/ vibration emissions during the construction phase. Whilst the potential for negative, significant and short-term impact at the closest receptors arises in respect of noise, with the proposed mitigation measures in place, the Proposed Development will not generate any perceptible levels of vibration during operation and therefore there will be no impact from vibrations on human health.

20.2.4 Interactions between *Population and Human Health* and *Landscape and Visual*

As set out in Chapters 7 and 13, there are potential interactions between population and human health and landscape and visual on the basis of the potential effects arising from visual effects upon surrounding existing dwellings and their occupants. However, as Chapter 7 confirms, even where the proposed development is more readily visible in its surrounding context, the magnitude of operational stage landscape/townscape impacts will be negative-neutral, moderate-slight and long-term at the closest receptors. The impact upon population and human health is therefore not considered to be significant.

20.2.5 Interactions *between Population and Human Health* and *Material Assets (Roads and Traffic)*

As set out in Chapters 7 and 17, there are potential interactions between population and human health and material assets (roads and traffic) arising from increased traffic volumes at construction and operational phase and the associated impacts surrounding air quality and

noise. However, as outlined within the respective chapters, with the proposed mitigation in place, the resultant potential impact is not considered to be significant.

20.2.6 Interactions between *Population and Human Health* and *Material Assets* (*Waste Management)*

As set out in Chapter 7 and 18, there are potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific C&D RWMP and OWMP (Appendices 18.1 and 18.2, respectively), will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be long-term, imperceptible and neutral.

20.2.7 Interactions between *Biodiversity* and *Land, Soils, Geology and Hydrogeology*

As set out in Chapter 8 and 9, there is a potential interaction between biodiversity and land, soils, geology and hydrogeology during the construction phase which will require the excavation and importation of large amounts of material. This is identified as having the potential to lead to habitat loss and the potential for pollution within the site and outside the site. Following the implementation of the mitigation measures in Chapter 8 and 9, there will be no significant effect on the Key Ecological Receptors.

20.2.8 Interactions between *Biodiversity* and *Hydrology*

As set out in Chapters 8 and 10, there are potential interactions between biodiversity and hydrology. This is identified on the basis that during the construction and operational phases of development, there is the potential for the proposed development to lead to pollution of the Stradbrook Stream and connected habitats downstream via contaminated surface water runoff. Following the implementation of mitigation measures outlined in Chapter 8 and Chapter 10, there will be no significant effect on the Key Ecological Receptors.

20.2.9 Interactions between *Biodiversity* and *Noise and Vibration*

As set out in Chapter 8 and 12, there is potential for interactions between biodiversity and noise and vibration on the basis that during the construction and operational phase of development there will be an increase in disturbance including noise and vibration that could potentially lead to increased disturbance. Following the implementation of the mitigation measures in Chapter 8 and 12, there will be no significant effect on the Key Ecological Receptors.

20.2.10 Interactions between *Biodiversity* and *Material Assets (Waste)*

As set out in Chapter 8, there is potential for interaction between biodiversity and material assets (waste) on the basis that there is the potential for the construction and operation of

the proposed development to lead to pollution within the site and the wider environment. Following the implementation of mitigation measures designed to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment as outlined in Chapter 8 and Chapter 18, there will be no significant effect on the Key Ecological Receptors.

20.2.11 Interactions between *Biodiversity* and *Landscape and Visual*

As set out in Chapter 8, there is potential for interaction between biodiversity and Landscape and Visual on the basis that there is potential for the construction and operation of the proposed development to lead to habitat loss, habitat degradation, the introduction of species of low biodiversity value and the introduction of artificial lighting. Following the implementation of the mitigation measures in Chapter 8 and 13, there will be no significant effect on the Key Ecological Receptors.

20.2.12 Interactions between *Land, Soils, Geology and Hydrogeology* and *Hydrology*

As set out in Chapter 9, there are potential interactions between land, soils, geology and hydrogeology and surface water, due to the excavation and removal of made ground and overburden which could potentially increase the sediment loading to the surface water environment and impact to associated aquatic species. Chapter 10 also notes that, further, contaminated or imported soil has the potential to run off during the construction phase and have negative impacts on surface water environments. The implementation of mitigation measures during the construction phase, along with good site management and construction practices will eliminate any significant impact on the environment and reduce significance to 'imperceptible' in all cases.

20.2.13 Interactions between *Air Quality and Climate* and *Roads and Traffic*

Chapter 11 identifies potential interactions between air quality and climate and roads and traffic, noting that interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on the surrounding road network and the proposed scheme. In this assessment, with appropriate mitigation measures the impact of the interactions between traffic and air quality are considered to be imperceptible.

20.2.14 Interactions between *Air Quality and Climate* and *Land, Soils, Geology and Hydrogeology*

Chapter 9 and 11 identify potential interactions between air quality and climate and land and soils on the basis that construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils.

20.2.15 Interactions between *Noise and Vibration* and *Roads and Traffic*

Chapter 12 and 17 note potential interactions between noise and vibration and road and traffic on the basis that the noise impacts have been fully considered in respect of traffic flow projections associated with the development.

20.2.16 Interactions between *Architectural Heritage* and *Landscape (Townscape) and Visual*

Chapters 13 and 14 identify a potential interaction between architectural heritage landscape (townscape) and visual on the basis that the development of the historic landscape significantly changes the character of the development site, including views into and out of the site. The receiving townscape is considered to have Medium sensitivity. The magnitude of townscape impact is therefore deemed to be Moderate-slight and of a marginally negative quality i.e. Neutral-Negative.

20.3.17 Interactions between *Material Assets (Waste Management)* and *Land, Soils, Geology and Hydrogeology*

As identified in Chapter 18, during the construction phase excavated material (c. 68,123m^3) will be generated from the excavations required to enable the construction of the basement, facilitate site levelling, construction of new foundations and the installation of underground services. It is estimated that 57,904m^3 of the excavated material will need to be removed offsite. Where material has to be taken off site it will be taken for reuse, recycling or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 9 (Land, Soils, Geology and Hydrogeology) and in the RWMP (Appendix 18.1), will ensure the effect is long-term, imperceptible and neutral.

20.3.18 Interactions between *Cultural Heritage and Archaeology and Land, Soils, Geology and Hydrogeology*

Chapter 14 identifies a potential interaction between archaeology and land and soils on the basis that there is potential for direct impacts on archaeological features as a result of construction activities including ground excavation. With the appropriate mitigation measures to monitor ground works associated with the proposed development by a suitably qualified archaeologist there are no predicted residual impacts upon the archaeological heritage resource.

20.3.19 Interactions between *Microclimate - Wind* and *Landscape (Townscape) and Visual*

Chapter 16 notes an interaction between microclimate wind and landscape on the basis that the landscaping proposals are incorporated into the wind modelling. With the proposed landscape mitigation measures, safety and pedestrian comfort is maintained in accordance with Lawson Comfort and Distress Criteria.

20.3.20 Interactions between *Material Assets (Roads and Traffic)* and *Material Assets (Waste Management)*

As identified by Chapter 18, waste has the potential to interact with roads and traffic on the basis that local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the Site during the construction and operational phases of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 17 (Material Assets - Roads and Traffic). With the mitigation measures detailed in Chapter 17 & 18 and the requirements of the OWMP (included as Appendix 18.2), the predicted effects are short to long-term, imperceptible and neutral.

20.2.21 Interactions between *Archaeology and Cultural Heritage* and *Architectural Heritage*

Chapters 14 identifies a potential interaction between Archaeology and Cultural Heritage and Architectural Heritage on the basis that heritage considerations form the basis of both chapters. With appropriate mitigation measures, there are no predicted residual impacts upon the archaeological and cultural heritage resource.

20.2.22 Interactions between *Population and Human Health* and *Material Assets (Built Services)*

As identified by Chapter 7 and Chapter 19, there is the potential for the built services to interact with population and human health on the basis that there is the potential for public health issues to arise due to the contamination of the surrounding water service networks due to the construction works. There is a potential for disruption to services due to accidents on site during the construction process. With the appropriate mitigation measures applied during the construction process, the danger to public health will be negative, significant, and short term.

20.2.23 Interactions between *Land, Soils, Geology and Hydrogeology* and *Material Assets (Built Services)*

As identified by Chapter 19, there is the potential for the built services to interact with land, soils, geology, and hydrogeology on the basis that during the installation process of the necessary built services, excavations will be required. These excavations will be limited in their depth and therefore with mitigation measures any impact they have on the land, soils, geology, and hydrogeology will be negative, imperceptible, and temporary.

20.2.24 Interactions between *Biodiversity* and *Material Assets (Built Services)*

As identified by Chapter 8 and Chapter 19, there is potential for the construction and operation of the proposed development to lead to impacts on local biodiversity and

downstream impacts on proximate watercourses and designated sites via excavation and installation works during the proposed implementation of infrastructure throughout the site. Following the implementation of the mitigation measures in Chapter 8 and 19, there will be no significant effect on the Key Ecological Receptors.

21.0 CUMULATIVE IMPACTS

21.1 Introduction

This Chapter has regard to the potential cumulative impact upon the environment arising from the proposed project, in combination with other developments (committed or planned projects) in the surrounding area. This Chapter should be read in conjunction with Section 3.7.1 and 3.7.2.

The accepted meaning of "cumulative impacts" is as set out in the Guidance on the Preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU) as:

> "*changes to the environment that are caused by activities/projects in combination with other activities/projects.*"

This very broad interpretation has been further defined in the Irish context in the EPA's 2022 Guidelines on the Information to be Contained in Environmental Impact Assessment Report to mean:

> "*the addition of many minor or significant effects including effects of other projects, to create larger, more significant effects*".

The EPA guidance goes on to provide that while a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or significant), result in a cumulative impact that is collectively significant.

Having regard to the built-up urban environment within which the subject lands are located, there is a significant amount of new development either under construction, permitted or proposed. In recognition of this, and the potential for cumulative impacts upon the environment, an extensive exercise has been undertaken to identify projects within the surrounding area that have the potential to give rise to cumulative impact, when considered in combination with the proposed development. The methodology surrounding the identification of relevant projects is set out below.

21.2 Methodology

A scoping exercise was first undertaken to identify an appropriate study area in respect of cumulative assessment. This comprised an initial survey of all planning applications within a spatial limit of c. 2km radius of the site boundary. A radius of c. 2km was selected for the reasons outlined in Table 21.1 below.

For the purposes of this initial survey, a search of all planning applications which were recorded on the National Planning Applications Database (DoHPLG) with extant permissions or were otherwise under consideration at the time of writing were included.

A screening exercise was then undertaken to determine whether each identified project has the potential to generate cumulative impacts of significance on the environment, when considered in combination with the proposed development. There were two stages to this:

3. Identifying projects of a scale and nature ('major' projects) with the potential to generate cumulative impacts of significance (in line with the parameters set out in Table 21.1 below);
4. The record of applications resulting from (1) was further reviewed by the expert consultants to determine whether the identified 'major' projects, located within a 2km radius of the subject site, have the potential, in respect of each environmental aspect, to interact with the proposed development from a cumulative impact perspective.

Following the above screening exercise, a consolidated list of projects emerged, including both committed and planned projects that were determined to have the potential to give rise to cumulative impacts with the proposed development. Some of the projects were identified by more than one expert consultant whereas others were identified in relation to only one environmental aspect.

This final list was then distributed to the expert consultants undertaking the assessment of each environmental aspect. For completeness, despite the initial screening process, each chapter has regard to all of the projects identified in Chapter 3 (Sections 3.7.1 and 3.7.2)

Table 21.1: Parameters/ Terms adopted in determining the study area and relevant projects for cumulative impact assessment with the proposed development.

Parameter/ term	Detail/ Definition	Justification
2 km radius	The 2 km radius was adopted to undertake the initial survey which identified all extant permissions within the area surrounding the planning boundary.	Having reviewed a number of recent EIARs that relate to development within existing built up areas, the general spatial catchment adopted in respect of cumulative impact assessment is 1km. For the purposes of this project, the EIAR team have had particular regard to the spatial catchment from a visual impact and traffic impact perspective which are determined to have the furthest reaching potential impacts. Otherwise, any further impacts are considered to be very localised. In addition to this, we have also considered the potential nature and extent of pedestrian circulation in the surrounding area (i.e. where are people likely to travel to on foot), having regard

		to surrounding public open spaces, employment locations and social infrastructure. Whilst 1km was considered by the competent experts to be sufficient to capture any potential cumulative impacts arising, it was decided to extend the spatial catchment to 2km to ensure that the assessment is as thorough and robust as possible given the scale of the proposed project. It is however noteworthy that following the screening exercise by the competent experts, the majority of projects identified as having potential for cumulative impact are within a 1km radius of site.
Extant Permissions	Planning permissions relating to committed development projects that have the potential to be implemented, at the time of writing.	The identification of all extant permissions ensures that any development that has the potential to interact with the proposed project from a cumulative impact perspective is identified (subject to the other parameters outlined in this section). This excludes planning permissions that have been granted but have since lapsed or been fully implemented/ operational at the time of writing. Implemented/ operational projects are captured as part of the assessment of the baseline environment.
Major projects	All development within 2km was screened for projects of a 'major' scale and nature. For the purposes of this exercise, the following developments were excluded: • Minor change of use applications;	The parameters for determining whether development is identified as 'major' or not was first considered in the context of Schedule 5, Part 1 and 2 of the *Planning and Development Regulations 2001* (as amended), in respect of development that requires mandatory EIA. The parameters were set to ensure that all surrounding development of a scale and nature requiring mandatory EIA would be captured, in recognition of their potential for significant environmental impact.

	• New residential schemes of less than 50 units; • New commercial schemes (including change of use) of less than 3000 sq m) • Retention applications; • Minor amendments to permitted applications; • Minor signage applications; • Other development types of scale that would not exacerbate significant environmental concerns (including car parking proposals, internal reconfigurations etc.) It is noteworthy that where sub-threshold development (in the context of the above criteria) was considered to have the potential for potential significant interactions with the proposed project, it was not screened out of the assessment.	Further to this, recognising that sub-threshold development (in an EIA sense) has the potential to give rise to significant environmental impact, both on its own or/ and in combination with other projects, the stated parameters were selected. In our opinion, this strategy is considered sufficient to capture the potential for incremental impact associated with the combination of a number of smaller projects. Notwithstanding this, as noted, where sub-threshold development (in the context of the selected parameters/ criteria) was considered to have the potential for significant interactions with the proposed project, it was not screened out of the assessment.
Committed Projects	Development projects with an extant planning permission, including projects currently under construction.	This parameter aligns with EIA Guidance surrounding the projects that should be included for cumulative impact assessment.
Planned Projects	Development projects (i.e. planning applications) that	This parameter aligns with EIA best practice surrounding the projects that

	have been submitted to a Planning Authority for a decision, but were yet to be decided at the time of writing.	should be included for cumulative impact assessment.
Time of writing	24th October 2022.	Considered to be appropriate cut-off date to enable to completion of the EIAR and submission of planning application. The scope of cumulative assessment, which gives consideration to planned projects, ensures that pipeline planning applications, if in the public domain, are captured by the assessment.
Expert consultants	The consultants that are responsible for the preparation of the chapters in respect of each environmental aspect assessed within the EIAR. The EIAR team, together with their qualifications, is outlined in Chapter 1 (Table 1.3).	This aligns with the requirements governed by Directive 2011/92/EU, as amended by Directive 2014/52/EU (together, the EIA Directive) which 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."*

21.3 Potential Cumulative Impact

Each Chapter which addresses a specific environmental factor provides a detailed cumulative impact assessment in respect of the committed and planned projects identified in Chapter 3 (Sections 3.7.1, and 3.7.2). The aforementioned chapters should be referred to for full details of the assessment; this chapter provides a summary of the cumulative impact assessment.

Table 21.2: Summary of the conclusions of the Cumulative impact assessment undertaken in respect of each environmental aspect.

Chapter/ Environmental Factor	Potential Cumulative Impact
Population and Human Health	Chapter 7 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, and 3.7.2 of this EIAR and concludes that other than the potential of neutral, imperceptible, and short-term cumulative impacts arising from construction activities upon human health (addressed in detail in Chapters 7 and 12), no further significant adverse cumulative effects would arise.
Biodiversity	Chapter 8 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Land, Soils, Geology and Hydrogeology	Chapter 9 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Hydrology	Chapter 10 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Air Quality and Climate	Chapter 11 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.

Noise and Vibration	Chapter 12 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2of this EIAR and concludes that there would be no significant adverse cumulative effects arising from the operational phase of the project. In respect of the construction phase, the assessment concludes that there is potential for cumulative construction noise impacts to arise which are expected to be negative, significant and short-term.
Landscape (Townscape) and Visual	Chapter 13 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3 Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Cultural Heritage and Archaeology	Chapter 14 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Architectural Heritage	Chapter 15 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Microclimate - Wind	Chapter 16 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR and concludes that there would be no significant adverse cumulative effects arising.
Material Assets (Roads and Traffic)	Chapter 17 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR. The estimated traffic arising from the development incorporates a number of committed and planned projects deemed to have potential cumulative interactions with the development. In this regard, Chapter 17 concludes that for the construction phase of development *"The volume of traffic to be generated is therefore modest and will not, in itself or in combination with other nearby developments, give rise to appreciable cumulative impacts on the surrounding road network".*

	The following is concluded for the Operational Phase Cumulative Impacts: **Vehicular Traffic** • The impact of other developments in the vicinity is captured by the application of TII growth factors to surveyed traffic volumes on the surrounding road network, which indicates increases of c. 4% per annum in background traffic volumes in the period to 2030, reducing thereafter. These figures also account for modal shift from existing car users towards more sustainable modes of transport, as the facilities available for these other modes improve with time. There is ongoing significant investment in bicycle, bus and train infrastructure, with ongoing increase in uptake of these modes. • Further, the impact of increased home-working in the aftermath of the Covid19 pandemic is not captured by these figures, and that has led to a general reduction in peak vehicular traffic flows on the road network. **Public Transport** • The impact of this cumulative additional passenger loading has been taken into account in the design of the future bus service network and therefore these cumulative impacts will be slight to moderate. **Pedestrian and Cycle Facilities** • The cumulative impacts in terms of these modes will be negligible.
Material Assets (Waste Management)	Chapter 18 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1, and 3.7.2 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.
Material Assets (Built Services)	Chapter 19 has undertaken a cumulative impact assessment of the proposed development in combination with the projects outlined in Sections 3.7.1 and 3.7.2 of this EIAR, and concludes that there would be no significant adverse cumulative effects arising.

21.4 Mitigation and Monitoring

Having regard to the conclusions set out in Table 21.2 above, the proposed project, when considered in combination with the committed and planned projects set out in Sections 3.7.1 and 3.7.2 of this EIAR, is not expected to give rise to significant cumulative impacts.

It is therefore further concluded that no further mitigation or monitoring measures are required, beyond those proposed by each chapter in respect of the proposed project.

21.5 'Do-Nothing' Effect

If the proposed project does not proceed, there will be no cumulative impacts arising.

22.0 ENVIRONMENTAL COMMITMENTS/ MITIGATION MEASURES

22.1 Introduction

Paragraph 2(d) of Schedule 6 to the *Planning and Development Regulations 2001*, as amended, provides that the following information must be contained in an EIAR:

> *"A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development;"*

This Chapter provides a consolidated list of all of the environmental commitments/ mitigation measures that have been recommended by the various specialists throughout the Chapters of this EIAR.

The mitigation and monitoring measures have been recommended on that basis that they are considered necessary to protect the environment during both the construction and operational phases of the proposed project.

A Construction Environmental Management Plan (CEMP) prepared by ByrneLooby and Roughan & O'Donovan Consulting Engineers has also been prepared and accompanies this planning application.

22.2 Summary Table

Table 22.1 (contained at Appendix 22.1) provides an overview of all mitigation measures proposed in respect of the environmental assessment contained within this Report. The mitigation measures should be read in conjunction with the associated chapters and assessment contained within.